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ABSTRACT

This is a report of a symposium held at Southern Illinois University to raise and study issues about liberal education in colleges and universities. The rationale underlying this particular topic centered around the feeling that the conventional approaches, formats, and content of liberal education are inappropriate to the educational needs of contemporary youth. The symposium was divided into 7 sessions conducted over 3 days. The opening session dealt with the present state of affairs in liberal arts education; the second was devoted to specific proposals for charting new courses involving a more creative usage of teachers of liberal arts; the third session was devoted to a discussion of some of the premises upon which the new liberal education can be based; the fourth session focused on the function of the teaching of science and technology in the new liberal arts; the fifth session turned attention to the problem of the teaching of values in the liberal arts; the sixth session centered around the question of the function of liberal education for social responsibility; and the final session looked toward the future roles for liberal education. (HS)

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Experimental Studies Symposium

toward a new liberal education

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Introduction

In an effort to provide a forum for the exchange of ideas that would lead to change in educational approaches, the first of a planned series of symposia was introduced on May 11, 1970, at Southern Illinois University. This first symposium, designed to raise discussion around the idea "Toward A New Liberal Education," was planned to engage faculty and administrators of the university in conversations about new directions in college education. The objectives of the whole series of symposia were stated thus:

1. To provide a forum for the exchange of ideas leading to change in educational approaches
2. To provide a vehicle for broadcasting innovative ideas in education to a large number of people, specifically within the Southern Illinois University community
3. To provide a mechanism for the recruitment of prospective change agents within the university such that an increasingly larger number of university personnel are involved in new educational approaches
4. To provide for the development of methods for the rapid implementation of such ideas within the university complex
5. To provide for the development of documents to be disseminated for wide usage and aimed at influencing implementation of educational innovation

The topic for this particular symposium was a result of a survey conducted among the faculty. An overwhelming majority had indicated a desire to be involved in a discussion designed to raise issues about liberal education in colleges and universities. The session was planned by the staff of Experimental Studies. The rationale underlying it centered around the feeling that the conventional approaches, formats, and content of liberal education were inappropriate to the educational needs of contemporary youth. Educational experiences that deal with the nature of the contemporary world, its present problems, and its future possibilities were felt to be much more appropriate for these students. A liberal education, it was felt, should assist young people in their efforts to adapt to a world of increasing complexity and problems.

It was further hoped that by involving a large number of the university faculty as contributing participants in the program the likelihood would be great that ideas appropriate to its academic programs would be forthcoming. Each session was set up so that members of the university faculty and administration were involved; one as chairman of the session, one as a paper-reader, and one as a discussant. In an effort to introduce concerns broader than Southern Illinois University, one outside speaker was invited to participate as a speaker in each of the sessions. The intent was to tie immediate concerns for innovation and change at Southern Illinois University to the broader concerns for educational reform at the societal level. The outside speakers were asked to prepare remarks that centered around "global" concerns in post–high school education and their own experiences and their ideas for new directions in liberal arts education. Thus the theme that guided the organization of the symposium was "Toward A New Liberal Education."

The symposium was divided into seven sessions conducted over three days. University students, faculty, and administrators were invited to sit in on the proceedings and to participate in the discussions. The opening session dealt with the present state of affairs in liberal arts education. Dr. King Cheek, then president of Shaw University, discussed the present, and in his view "damning," shortcomings of the current attempt at liberal education and proposed an overall restructuring of this effort. Dr. John Reiner of Southern Illinois University noted the absence of community in the university setting and offered the possibility for establishing viable community configurations within the university involving its several functional constituencies.

The second session (devoted to specific proposals for charting new courses as they involve a more creative usage of teachers of liberal arts) saw Dr. Thomas Powell, Dean of Liberal Arts at Oswego, suggest ways of redeploying the efforts of liberal arts colleges so as to better train students and to simultaneously involve instructional staff in more meaningful and satisfying ways. Dr. Merrill Harmin of Southern Illinois University followed by submitting strategies for training teachers of the new liberal arts programs. He also suggested some notions that can be utilized in "re-tooling" instructional personnel for the new directions.

The third session was devoted to a discussion of some of the premises upon which the new liberal education can be based. Chief Fela Sowande of Howard University called for the recognition of the need to broaden the liberal education so as to include an eclectic notion of the nature of the whole world. He suggested that the new liberal education must take into account the fact that the world has shrunk in proportion to our communications capabilities on the one hand and our ability to move with ease to all points on the globe on the other. He concluded that the new liberal education must be buttressed by an attempt to weld the science of the West and religion of the East into an enterprise capable of bringing man's spirit to the fore. Dr. Fritz Marti of Southern Illinois University noted the difference between the man in servility and the man who is "liberated," and showed that the prime function of a liberal education is to give man that mastery over things and over himself which will lead from the former to the latter, valued, state.

The fourth session was focused on the function of the teaching of science and technology in the new liberal arts. Donald Mandell of Sarah Lawrence College called for the shaping of curricula that would promote what he called "the development of scientific responsibility with regards to the welfare of mankind." He suggested the development of educational experiences that develop an appreciation for man's place in the world ecological system and responsibility to honor its requirements for balance. A series of alternatives to the present format for teaching biology were offered by Dr. Gertraude Wittig of Southern Illinois University. She used the teaching of biology as an example for making science taught within the context of liberal arts more meaningful to its students.

The fifth session turned attention to the problem of the teaching of values in the liberal arts. All three speakers at this session stressed the need for extended efforts in the consideration of values. Dr. Robert Thompson of Yale University deplored the present "objectivity" of most liberal arts programs and suggested that "values and human concerns are of primary importance" in such an educational undertaking. Dr. Henry Richards of the State University of New York at Buffalo suggested that black studies, the first of a variety of such ethnic programs, will break down the mental strictures of ethnocentricity and contribute to the evolution of values capable of encompassing all men. Contemporary statements on values, as indicated by the nature and content of present liberal arts courses, are narrowly provincial and spiritually binding. Dr. Gertrude Drake of Southern Illinois University recalled the intent of education as embodied in the fabric of Greek thought in her reflections on the aims of learning.

The sixth session centered around the question of the function of liberal education for social responsibility. Dr. Stephen Baratz of the National Research Council of the National Academies of Science contended that socially responsible individuals must be developed by American educational enterprises so that the operation of our social institutions can be directed in a more humane fashion. Dr. John Ellsworth of Southern Illinois University focused on selected strategies that could eventually result in the articulation of a liberal arts program that could produce a liberally educated individual who is capable of exercising social responsibility.

The final session looked toward the future of our society, and the speakers speculated about possible future roles for liberal education. Dr. Peter Rossi of Johns Hopkins University suggested that present educational goals center around the realization of certain socioeconomic ends and as such produce individuals with "unidimensional minds." He further suggested that present trends indicate that complexities of enormous magnitude will characterize both the technical and nontechnical areas of life in the twenty-first century. He offered notions for the cultivation of "multidimensional minds for the future." Dr. Kenneth Myers of Southern Illinois University focused his remarks on the technocracy of the future and the corollary changes required for liberal education. He offered several specific suggestions for utilizing our great technological capability in efforts aimed at liberal education.

Each of the sessions proved lively, characterized by vigorous give-and-take between speakers and discussants and equally vigorous participation from the audience during open discussion.

Damn the System

King V. Cheek, Jr., *Shaw University*

It is very easy in argument to deliberately pose hypotheses so that they are vulnerable to attack and criticism. So much of the criticism of the university and its "real" purpose is of this type.

The larger debate of what the university is all about may never be settled. We know that it is multipurposed and multifaceted. It serves many needs, some of which may be in conflict with one another. The dialogue over priorities is very interesting but seldom reaches concrete conclusions.

The discussion which follows is concerned about one role of the university and one need in the society; that is, the response which the university must make to a segment of our human population commonly called the educationally disadvantaged.

Not all educational institutions in our society recognize this problem or are committing resources to its resolution. No criticism, at this point, will be made of the ethics of this omission or of the priority-ranking which this problem receives.

The assumption is that in order for any university to make a meaningful response to the problem of the disadvantaged it must be an effective self-critic. The focus of this discussion will be on "the system" of higher education and its restrictions, resistances, hitches, and other hang-ups which tend to negatively affect efforts to deal with the academically disprivileged.

It should be understood that the terms *disadvantaged* and *disprivileged* are ambiguous. In this context they refer to a group whose academic and socioeconomic backgrounds are atypical as defined by the majority culture. For many, these terms are used to refer to "black students" who come to college from an environment that is isolated, in part, from the larger society. "Even where the precollege school experience has been an integrated one, the factor of color and its attendant implications and meanings have helped to shape the student's perspective and weltanschauung (world view) to such an extent that even in the midst of integration he has lived a relatively isolated and atypical life."[1]

How does the student who comes from a background of oppression which has stripped him of his dignity and self-confidence respond to a system whose criteria for admissions, retention and graduation, curricula, etc., all reflect normative values and considerations of the larger or "dominant" culture?

The criticism of the "system," therefore, is simply a demand for a structure more responsive to the needs of students whose life experiences emerge from atypical precollege environments.

THE SYSTEM: ITS REQUIREMENTS AND DEMANDS

The Experimental or Special Compensatory Program. A careful look at many of the existing experimental or special compensatory programs existing at both the predominantly black and predominantly white institutions may expose some interesting problems.

In many instances there is a burning desire on the part of the faculty to teach the "bright" student. This desire, coupled with attitudes that these experimental programs do more than provide a home for the intellectually indigent, poses a major obstacle to the success of creative innovations. Many of the doubts about a student's educability are reflected in patronizing attitudes and habits, with the teacher still maintaining his old authoritarian role and teaching as if his students are incapable of intellectual excitement.

In the case of the student, he comes to these programs with the absence of (1) an appropriate self-concept as a learner, (2) self-confidence, and (3) sufficiently developed learning skills; each compounding his fear and distrust of a system which, for him, is simply a reflection of the larger hostile society.

Many of these students are expert manipulators of their environment, as they had to be to survive. Their life styles and behavioral patterns, previously developed, are not left behind when they enter the higher educational system. In many ways they confront many of the same old problems. The system, in some ways unlike their previous environment, demands all sorts of tasks, many of which are unrelated to their basic desires. Such tasks are determined by an outside authority figure whose approval must somehow be won to ensure their success.

Furthermore, the student enters many of these programs only after having been branded disadvantaged and disprivileged. These approaches of labeling or classifying them prebaccalaureate and precollege, though honestly motivated, in many instances, reinforce already entrenched feelings of inferiority and hostility. The problem is compounded when the student enters a system which recognizes distinctions between credit and noncredit courses of study, and he is placed in the latter.

Finally, many of the special programs are so developed that there are few sufficiently established guarantees of a minimum number of success experiences to encourage the student's confidence. Self-dignity and self-confidence under these conditions are difficult to achieve and maintain.

It would appear clear, therefore, that the initial concerns of these programs should be the development of a positive self-concept and the restoration of self-dignity. The climate of learning must elicit responses which are self-motivating rather than those which arise out of fear or a desire to win approval of others. Minimum success experiences must somehow be guaranteed, or at least severe penalties must not be imposed for initial failure. The ideal would be the absence of a student confrontation with failure or the fear of failure.

Academic Excellence and All That. Some critics tell us that regardless of the reforms that take place in higher education, we must not sacrifice "academic excellence."

It would be easier to respond to this mandate if there were a clear understanding as to what it means. Certainly, the goal of inspiring a love for high quality and standards is a noble one. But whose qualities and standards are to be used as a reference point? If it means something similar to the biblical injunction "Whatever thy hand findeth to do, do it with thy might," who could argue with its wisdom?

Unfortunately, the debate over excellence gets related to the matter of admissions standards, retention, and evaluations or grades. Herein lies the real concern for both the advocate of reform and the advocate of the traditional system.

How does this debate relate to the student in question? The problem really begins before he is admitted. In most instances, he is classified as high risk, etc., because of his high school grades or his performance on a nationally standardized test such as the SAT.

If he is fortunate enough to make it past this obstacle course and is admitted, he will probably find himself in an environment which places few rewards upon self-creativity, self-direction, and involvement. He will have little to do with determining his own educational goals or objectives. His desires will point to the day when he will receive that degree——that certification that will entitle him to membership in the community of educated men and women.

Many of his energies will be devoted to manipulating the system to acquire the symbols of success——the grades which supposedly measure or adequately reflect what college is all about: achievement in course work.

It would be relatively easy for the unorthodox among us to ignore this aspect of the system except that so many of the important decisions which affect students are based upon these symbols.

Many of us who teach recognize grades for what they are——bookkeeping or accounting entries, which in many instances reflect more of the personality of the teachers than of the achievement levels of the student. Once that grade is recorded, who really knows——except perhaps the one who entered it——what it really stands for or which variables entered into its determination?

The system is programmed to depend upon grades. How else, it is argued, can academic excellence be defended and maintained? Point values are assigned to these symbols, and the accumulation of points determines decisions ranging from eligibility to play football and to join a fraternity to eligibility to remain a member of the academic community.

Whether the student graduates depends upon his cumulative grade point average. That final decision ignores the basic question of whether that student over a period of time has developed the competencies and understandings which will enable him to function in society. What he is, at the time of intended graduation, is the most important question. His previous failures are really irrelevant in this consideration. Yet the system penalizes him for his past failures and initial deficiencies.

How is this aspect of the system related to the special concerns, problems, and needs of the educationally disadvantaged? Consider the case of the student who enters college with serious deficiencies in learning skills. This student may be a late bloomer whose initial performances are not very good. He may, however, come alive after he learns to read and develops a rudimentary understanding of the techniques of study and systematic inquiry, including an appropriate view of the self as learner.

However, his cumulative average reflects his initial shortcomings, distorts and provides no adequate and precise picture of the current level of his abilities. He is penalized for his delays when the only relevant consideration is whether when he seeks to leave he has developed those competencies and understandings which were the objectives of the program. Whether he stumbled X number of times in the course of his development tells us very little about where the student *is* at a given point in time.

But the system must be maintained, if for no other reason than to tell us which students should be dropped for poor scholarship and when. If a cumulative grading system has to be used for this purpose——and I doubt its necessity——then equity would demand weighting of the more recent grades, assuming they really mean something. Rejected students join the ranks of the flunk-outs who reenter society hostile, defeated, and with their egos severely damaged. For what purpose——academic excellence and high standards? Whose interests are being served? Honesty dictates that we admit to the hypocrisy of protecting the image of the institution, because in our world how we are regarded by others is very important. What institution could sustain the assaults of others if it admitted students and stuck with them till the very end——even if it meant an investment of six or seven years instead of the traditional four?

I have even overheard my colleagues in this profession comment about the number of students who were flunked out of a given college. The suggestion was that, somehow, this was indicative of the comparative high quality of the school. This is sheer nonsense. I would argue the contrary. This practice reflects a major failing of the institution. Teachers aren't teaching unless others are learning.

Dropping the student for poor scholarship, in my judgment, serves no useful purpose unless the decision is made on the rationally derived conclusion that the help he needs can best be obtained in another setting. If indeed this is the case, then some other type of severance should be created and joined with effective counseling. In this way the student is not branded, and he leaves with a better view of what his life paths should be.

Confronted with these risks and demands, it is no small wonder that students become manipulators and expend energy on cheating and other practices calculated to gain them success. It is easy to moralize when we are condemning others, namely, the students. If moral judgments are to be made by those of us who call ourselves educators, let us begin with ourselves and recognize the demands for survival which we create and maintain. Our shortcomings shame us, for we are not alone in paying the penalties and the price for them. The major impact falls upon the student. Martin Duberman expresses it in the following statement.

> In many cases four years of college do not initiate or further but dampen or destroy efforts at self-exploration. This may not be the intent, but it is nonetheless the result of tactics employed by those who administer and teach in a university. They make certain that the student's energies are directed at fulfilling tasks set by them rather than by himself; they encourage him to define his worth in terms of his success in winning their approval––high grades, good letters of recommendation, departmental honors, prizes. He is taught to regard these tangible signs of election as the only important evidence or kind of achievement and as the indispensable precondition, almost the guarantee, of a satisfying life. What he is not taught is that orientation toward gaining the approval of others carries high costs: the acceptance of disguise as a necessity of life; the unconscious determination to manipulate others in the way one has been manipulated; the conviction that productivity is more important than character, and success superior to satisfaction; the loss of curiosity, of a willingness to ask questions, of the capacity to take risks.[2]

This system, because it promotes very little and accomplishes even less, should be replaced with newer, more innovative approaches.

What Information Is Vital? No one has really agreed on what information is vital and essential and on which methods for imparting knowledge are the most effective. There is very little agreement on what students or adults ought to know.

This is not to suggest that the absence of such agreement is bad. The sad truth is that many of us delude ourselves into thinking that we know which information is vital.

The traditional assumptions underlying many curricula approaches suffer from this mistake. The result, in many instances, is that both student and teacher are bored to the point where the entire process lacks excitement.

I recall an attempt by one college faculty to develop an innovative cross-disciplinary curriculum called "Twentieth Century Man." The major criticism from their colleagues was that such a course would not adequately prepare the students for the Graduate Record Examination––another requirement of the system.

Why should the content of a curriculum be established and determined by outside bureaucracies? Those who have the urge to fight are discouraged as they recognize the importance for the student of a "sterling" performance on the GRE. It will net him points for graduate school fellowships.

It is unfortunate that our programs have so emphasized volumes of knowledge that students and faculty have little time to become emotionally involved and excited about their own education. Wouldn't it be beautiful if students were persuaded to choose teachers instead of courses? I suspect the experiences would be far more valuable, and those professors who have empty classrooms would be forced to reexamine their styles, motives, and attitudes.

Learning is a lifelong activity, and students must be taught "how" to learn rather than be fed, pablum style, bits and pieces of information which may have little relevance to their personal experiences or concerns. Additionally, what is taught must be imported in a manner calculated to have lasting impact. We all know of the typical description of a student sitting in a course, memorizing the material because he knows he will see it on an exam, parroting it back to his teacher, and then engaging in a kind of intellectual purge so that he can prepare for his next exam.

Beyond what we call the "learning or coping skills," what a student needs in the way of specific knowledge is a debatable question and cannot be so easily determined. If his purpose for college is preparation for a specific career for which there are set prerequisites, his task is easier. They are defined by his aspirational needs. The same conclusions cannot be made for the student whose career goals are not clear. Even in the area of business management we cannot know for certain what information the student needs. Yet our pretense is reflected in our specialized and highly rigid requirements in that area, denying the potential businessman an opportunity to broaden his perspective in the humanistic disciplines, knowing that style, attitudes, and intellectual discipline will be his real basis for success.

The information explosion and the easy means to acquire it have made the dissemination of information and mastery of knowledge a questionable objective in the university.

For the atypical (disadvantaged) as well as the typical student I would argue for a learning environment designed to develop methods of thinking, identity of the self as learner, meaning of personal identity, involvement, and social responsibility. The end is a critical and sensitive judgment. Knowledge and information are only the means to this accomplishment. Knowledge becomes not an end in itself, but by making it personally and socially relevant the student develops an understanding which enables him to act wisely, decisively, and effectively.

This objective is illustrated most clearly in the current demands of black students for "black studies" programs.

> The demand for "black studies" programs, I suggest, is more than a demand for academic recognition of the historical, cultural, scientific, artistic-humanistic contributions, achievements, etc., of black people. It is really a demand of the spirit for self-fulfillment, a cry of the heart for meaning, a yearning of the soul for significance.
>
> The black student who cries for relevance in his education is not denying the importance of academic excellence. What he seeks in relevance is an ontology, phenomenology and epistemology that will enable him more fully to function as a human being.[3]

Part of my frustration with the current debate is my inability to relate to the concept of a "well-rounded" individual or "renaissance" man. Would there be any value in seeking to discover that which a person does best or would enjoy doing most and tailoring a program of study and activities to enable him to develop that talent as best he can?

This approach, no doubt, would require greater participation on the part of the student in determining his goals and routes. It might also pose problems for those who pay homage to the rigid requirements of particular disciplines as they are articulated in college catalogues. In some cases majors may even be discontinued for students whose vocational interests are not promoted by them. Along with the individualization of programs, the curriculum concept of what is "academic" could be broadened to encompass all of the varieties of activities and experiences calculated to motivate, inspire, and promote learning.

Lest I am misunderstood, I am not suggesting a setting in which every student is permitted to do his own thing without regard to some structure. What I do propose are more student-oriented concerns and student involvement in a manner designed to promote greater personal creativity and diverse individual development. This is a response to the student's cry for an active rather than a passive role in the learning process.

DIFFERENTIAL PACING: AN ALTERNATIVE TO THE SYSTEM

Obviously, when one begins to talk about junking the current system, he wants to offer something he thinks is better. Often what is promoted is simply another type system, different perhaps, but still a system. The major advantage of differential pacing is that it appears to more nearly meet the need of the atypical. It is offered as the university's creative response to the needs of disadvantaged youth.

Under this arrangement students are admitted without regard to "standards and judgments about their learning potential" based upon the nationally standardized SAT. It is accepted that some effort must be made to discriminate among students if for no other reason than the problem of space and numbers. I do not offer a solution except to say that more is available than the SAT score and high school rank.

The student's strengths and weaknesses respecting his learning skills or academic readiness are pinpointed. In a real sense an attempt is made to meet him where he is and to help him acquire the essential tools of learning. In so far as possible, each student advances at his own rate of speed. For example, he remains in communications until he acquires a proficiency in that skill.

Within reason, he is tested when he believes himself ready. When his estimate proves incorrect, it will be merely a delay and not a failure. It is most important that he not be confronted with the prospects of failure. Every effort is made to insure the confidence necessary for his motivation.

While many students may complete such a program in four years, others may take more and some may take less. The student with serious academic deficiencies will not be handicapped by a requirement of success in four years.

Furthermore, each student is treated as an individual and every student has the opportunity to proceed toward graduation as swiftly or as slowly as his initiative, interest, industry, motivation, and scholastic accomplishment permit.

The classroom becomes simply one of many avenues of learning as a multiple number of approaches are developed and made available. The student, aided by counselors, selects the paths and media most appropriate for his individual needs and interests.

Grades are not really necessary. The student works and develops until he meets minimum proficiency requirements in the program individually developed. His delays become unimportant except to guide him to alternative paths. His retention is not challenged until he, in conjunction with other informed judgments, decides another environment would perhaps be more appropriate. There may be other reasons for severance, such as disruptive conduct, but decisions regarding academic severance will not be made in the traditionally automatic manner.

Understandably, there are a number of problems related to this approach. One obvious difficulty is that of educating both student and parent to its uniqueness, especially since, somehow, the concept of "four years" of college has become so sacred.

If the response to the needs of the disadvantaged is to have any meaning at all, it must relate to the real task of developing and investing in human capital. The traditional standards and concepts and the aim of maintaining prestige images must be sacrificed in this endeavor.

FOOTNOTES

[1] James E. Cheek, "Special Studies at Shaw" (unpublished manuscript).

[2] Martin Duberman, "An Experiment in Education," *Daedalus* (Winter 1968), p. 320.

[3] Cheek, op. cit.

The Status of "Community" in Modern Liberal Education

JOHN R. REINER, *Southern Illinois University at Edwardsville*

Liberal education connotes a wide spectrum of meanings, varying with the listener, the speaker, and perhaps even with the situation in which the phrase arises. Connotations differ greatly even in the academic world, which ostensibly is the guardian of liberal education, but here a massive tradition largely dictates the realm of liberal studies. A major element of this tradition, and a very hallowed one, has been the sense of community ordinarily associated with the academic world, ascribed to members of this world by "outsiders" as well as members themselves.

Probably the most articulate and tenacious spokesmen for the preservation of a sense of community in higher education have been those who associate themselves with the liberal arts (however defined). It seems appropriate then for anyone interested in the liberal arts to devote some thought to the present state, and more important, the *future*, of one of liberal education's most cherished accouterments: the community of scholars.

A DEFINITION OF COMMUNITY

As a reference point for further discussion, a community may be defined formally as follows:

> A community is a cluster of people, living within a continuous small area, who share a common way of life. A community is a local territorial group.
>
> In most preliterate societies, community and society are one. In most civilizations, society is made up of separate but intersecting communities which share a more or less common social life. At the same time, however, those communities are quasi-independent and are in *some* measure distinguishable in dress, manners, habits, and social codes. In both cases, the community itself is a local territorial group.[1]

Clearly, the major distinguishing features of a *community* are defined by (1) life in a continuous small area, and (2) sharing of a common way of life. On the other hand, a *society* is distinguished (1) by the inclusion of several intersecting communities, (2) by the sharing of a more or less common social life, and (3) by some amount of distinction between its several communities in terms of dress, habits, and codes.

CHARACTERISTICS OF MODERN COLLEGIATE LIFE

American higher education is such a variegated establishment that generalizations about specific aspects of the situation should be avoided, and the existence or nonexistence of "community" in higher education may be one of these specific aspects. Yet it is possible to examine this question by judging certain characteristics of American higher education against the formal definition of community presented above.

Changes in Enrollment Patterns. Proximity is an essential part of the sociological definition of community, and proximity is essentially the element which makes eating-living centers so much a foundation of a true academic community.[2] There is reason to question the proximity of most American college students to each other in the sense used here. In 1960, Trow pointed out that the large enrollment increases of the late 1950's were, to a significant degree, increases in enrollment in institutions which were largely nonresidential, with the consequence of less student involvement in campus affairs of all kinds. Under these conditions, he asserted, it is impossible for an intellectual community to form around a residence or eating place.[3] This enrollment trend, pointed out ten years ago, does not seem to be abating. A look at the *School and Society* annual enrollment tabulations for fall, 1969 (a traditionally reliable source), bears this out.[4] There were an estimated 7,750,000 students (headcount, both full- and part-time) enrolled in approximately 2,500 American collegiate institutions as of the fall term, 1969. Of these, approximately 771,000 were identified as being enrolled full-time in four-year, accredited, urban institutions, thus being predominantly nonresidential. Approximately another 1,600,000 students were classified as part-time enrollees in four-year, accredited colleges and universities and junior colleges. Of these, perhaps 1,750,000 (a conservative estimate) were enrolled in public junior colleges. Thus the enrollments which can be termed nonresidential-urban, all part-time, and all public junior colleges accounted for roughly 4,141,000 of all enrolled students, or 53 percent. This is probably a conservative estimate, because it is based on the assumption that in all institutions except urban and public junior colleges, only part-time enrollments are nonresidential. Since this is an obvious false assumption, the true number of nonresident students as of last fall, as a conservative estimate still, was probably from 60 percent to 65 percent of the total.

While these tabulations are only approximate, they do suggest that the majority of college students today, simply because they do not live on campus, (1) do not come into contact with their fellow students intensively through dining and residence, (2) do not share life in a continuous small area, and (3) only to a limited extent share a common way of life. Thus in respect to enrollment patterns, the criteria for "community" are not fulfilled.

The Effects of Size. Large institutions enroll the majority of students, and these students are exposed to a multiple environmental setting because of the sheer size of the enterprise of which they are a part. Can the typical large university be termed a community under the conditions of size? Jencks and Riesman mentioned size as an element to consider in any discussion of an academic community; while no optimum size was given (a group can be too small or too large, depending on many variables), the large multipurpose institutions certainly exceed any realistic maximum which might be imposed.[5]

Of course, size per se cannot be suggested as a determining factor. Rather, size produces a great variety of factors which work against the cohesiveness which is generally associated with the idea of community. There exist in the modern institution many pressures which are so contradictory and powerful that they invite irrational response, and divide rather than unite. Expanding functions, huge numbers of students, changing needs and characteristics of students, greater university involvement with the world around it, the changing role of the professor, multiple institutional goals, and competition from many areas for funds seem to be the most significant pressures. Thus size, not by itself, but by the variety of conflicts and problems it imposes on all participants in institutional life, works against the existence of a community in the sociological sense.

Role and Reference-Group Conflict. All individuals, regardless of the group or institution of which they are a part, have reference groups which they feel are important to them for various reasons. Under no circumstances would one expect to see all members of an institution operating without some conflict of role. But a modern college or university has some special problems. Faculty members perceive their discipline as their prime reference group, while administrators have a number of crucial reference groups, any one of which at any given time could be of prime importance.[6] Students, whose reference groups might be somewhat similar to those of the faculty or administration in their general effects, necessarily would have different prime reference groups. These widely varying sources of pressure break down the "common way of life" which is a major factor in the formal definition of community.

The Effects of Individualism. A superficial analysis of present college and university life could easily lead to the conclusion that modern students and faculty are extremely interested in participation and involvement. As Kenniston has pointed out, however, such a conclusion probably is not valid. On the contrary, he asserted, youth place the most emphasis on those aspects of their life which are most separate from the larger world around them, and hence most under their personal control and ability to structure. His major point was, of course, that most students place highest value on their private lives rather than on involvement in a larger range of events.[7] The contention certainly does not apply to all students; this is abundantly clear. But for the majority, private aspirations and satisfactions far outweigh urges to espouse any of a number of causes, at least publicly.

There is little to indicate that faculty members are generally inclined to participate widely either, although their position may be mediated to a degree by professional commitments to such activities. This would certainly be the situation with regard to a faculty member's discipline, because participation in this instance is literally a matter of professional survival. Participation by faculty members also would be fairly observable on the departmental level. But once beyond this, participation is usually minimal, and always can be associated with a relatively small number of individuals at any institution.

For most students and for a large number of faculty members, then, it seems reasonable to suggest that private or semiprivate activities and motivations are the norm. Under these circumstances, the "common way of life" criterion of the formal definition of community is hardly met.

CAN INTELLECTUAL COMMUNITIES EXIST IN MODERN HIGHER EDUCATION?

If a sociological definition of community is accepted, it is reasonable to conclude that for the majority of students and faculty, the institution with which they are affiliated, taken as a whole, *is not a community*. The majority of students presently are nonresidential in the traditional sense, and this pattern is certain to continue with the increasing importance of junior colleges and urban institutions.

The complexity and conflicting pressures associated with size, combined with a great diversity in roles and reference groups of participants in a university experience, make the sharing of a common way of life impossible except in a very limited sense. Too many alternatives exist for students, faculty, and administration. In addition, most students and faculty cope with the complexities of modern life by emphasizing private concerns, at the expense of the quality of any community life which might possibly exist.

COMMUNITY AND LIBERAL EDUCATION

Is the idea of "community" as traditionally associated with liberal education obsolete? A great many institutions where goals, composition of faculty and student body, size, and residential patterns are all clearly fitted to the formal definition can certainly be termed communities. Many liberal arts colleges are excellent examples, so the idea certainly is not completely obsolete. Even at some very large universities, conscious programs have been developed with the hope of preserving a sense of community, usually centered around dining-living-learning modular arrangements.

But what of the rest of higher education––indeed, the majority of institutions? All trends are to increased institutional size and complexity. It is tempting to shrug off all large, multipurpose institutions, technical institutions, and commuter institutions as beyond the purview of liberal education. But the exigencies of the situation dictate otherwise: these institutions enroll most of the students and teach liberal arts to these students.

The traditional association of "community" and "liberal education" is clearly inappropriate for most of the academic world. Several possibilities for the future seem apparent, then. First, the idea that a sense of community is important to liberal education might be abandoned, although a mythical and rhetorical community will surely be preserved, and might be encouraged for the sense of security which would accrue.

Another possibility would be to rebuild all institutions around the residence-centered models provided by the traditional liberal arts college. This approach is being tested at various institutions, with generally positive results. But even in these cases, experimentation has been limited by costs, and more or less inserted into existing arrangements.

A third approach, which is the most challenging and would require a great deal of experimentation, would be to encourage the natural discipline identification of faculty, attempt to shift it toward slightly larger units, and somehow bring students into the scheme. In other words, the answer might be to focus energies on the formation of communities based on cohesive elements *other* than dining-residence arrangements and to admit that most modern institutions fit the formal definition of a *society* better than that of a *community.*

The comments in this paper concerning the breakdown of the traditional academic community and the possible place which the idea of community will occupy in liberal education in the future were not meant to be exhaustive. The points discussed deserve much greater elaboration. But it is hoped that these assertions will help illustrate the fact that a *new* liberal education is a vital goal because several trappings of the *old* liberal education almost certainly are gone forever.

FOOTNOTES

[1] Arnold W. Green, *An Analysis of Life in a Modern Society* (New York: McGraw-Hill Book Co., 1960), p. 254.

[2] Christopher S. Jencks and David Riesman, "Patterns of Residential Education: A Case Study of Harvard," in *The American College,* ed. Nevitt Sanford (New York: John Wiley and Sons, 1962), pp. 762–73.

[3] Martin Trow, "The Campus Viewed as a Culture," in *Research on College Students,* ed. Hall T. Sprague (Boulder: Western Interstate Commission for Higher Education, 1960), pp. 120–21.

[4] Garland C. Parker, "Statistics of Attendance in American Universities and Colleges, 1969–70," *School and Society* 98 (January 1970): 41–58.

[5] Jencks, pp. 762–73.

[6] John W. Gustad, "Community, Consensus, and Conflict," *The Educational Record* 47 (Fall 1966): 439–51.

[7] Kenneth Kenniston, "Social Change and Youth in America," in *The College Student and His Culture: An Analysis,* ed. Kaoru Yamamoto (Boston: Houghton Mifflin Co., 1968), p. 50.

Toward a "New" Liberal Education

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In the summer of 1858, when Lincoln and Douglas were commenting on one another's views, Judge Douglas said that he had already spent several years on the cause of popular sovereignty and that he intended to devote the rest of his life to it. Lincoln commented that he doubted Douglas could find anyone to oppose him on the proposition of popular sovereignty. He said, "This being so, what is Judge Douglas going to spend his life for? Does he expect to stand up in majestic dignity, and go through his apotheosis and become a god, in the maintaining of a principle which neither man nor mouse in all God's creation is opposing?"

On the surface it may seem that advocating reform in liberal education is playing Mr. Douglas's game; and yet, after all the years of discussion and debate, there is powerful, genuine opposition to real innovation. Irving Kristol, for one, represents a major segment of academic opinion when he argues for the dissociation of academic efforts from current social, political, and ideological concerns. I disagree with that segment of opinion. The survival instinct of the human race deserves some confidence: what people care about should have a great deal to do with what they are asked or required to learn. While young people's minds are the chief target of educators, their minds are inextricably bound up with their feelings: the talk of "relevance" is not mere cant. I take it that the National Endowment for the Humanities invests wisely when it supports programs like that at the University of Nevada, attempting "to demonstrate how an awareness of the interrelatedness of humanistic elements in the arts and sciences can contribute to solutions of the intellectual and practical problems of man today."

Clichés sometimes survive because they have undeniable elements of truth as well as simplicity of form. One of these is that education is preparation for life if it is anything. Since liberal education is self-development, virtually anything in the world that is not simply trivial can be relevant to the process. Shakespeare is relevant whether or not you are inclined toward the natural sciences; physical geology is relevant whether or not your principal interest is Shakespeare. The world is grist to your mill.

Twenty years ago, Harold Taylor wrote in his introduction to *Essays in Teaching:*

> The reason for the existence of the college is to aid the individual student to develop the most that is in him. Scholarship, research, teaching, community life, administration are all means by which the student may be developed into the full growth of his emotional and intellectual life. This means that the usual programs of the college curriculum must simply be reversed. They must be planned from the inside out, from a knowledge of the students and what they are capable of learning.[1]

Now it is only necessary to add to a knowledge of what they are capable of learning, a knowledge of what they will accept as learning, and a knowledge of what they must learn to survive and live well in an era of unprecedented acceleration of change.

Liberal education has not changed its goals: it is still aimed at liberation from the meaninglessness and helplessness of uncommitted, unprincipled existence. It is still the development of principles and values which guide individual effort toward fulfillment in identity, integrity, and community. It is still work in the Greek sense, that continuous self-examination which results in happiness. But the forms of liberal education are changing and must change still more. We have to accommodate young people in light of the scientific, axiological, aesthetic, social, political, and economic peculiarities of the late twentieth century.

In concrete practice, we have to erase the arbitrary boundaries among "disciplines," recognizing them as largely the administrative and taxonomic conveniences of an earlier time; to recognize in practice the fact that liberal education is self-education; and to encourage student initiative and responsibility. Every college committee participating in the Danforth seminars in Colorado a few years ago came to the conclusion that liberal education needs to move in the directions of greater interdisciplinary involvement, more individualization of curricular options, more independent honors-type work, and more experimentation.

The importance of information itself is debatable, because we lump together all sorts of information in categories like "history," for example. If a student learns that Dr. Spurzheim introduced phrenology to the United States in the 1820's, all he has is a fact. But if he learns that popular patent medicines, such as Lydia Pinkham's Vegetable Compound, contained a great deal of alcohol, he has more than a fact: he has a possible explanation of how a vast number of American ladies made it through the difficult day-to-day life of the nineteenth century. In any case, he doesn't really need a professor to tell him such facts: the single most valuable role of the faculty member is to help students develop the skills that will make them independent, and that is done largely through example. Instructors have to be highly motivated for this kind of teaching. Like parents, they have to care enough about their young charges to make them independent. When they do, there is no shortage of possibilities for innovative, imaginative teaching through curricular arrangements as well as through example.

Harold Rosenberg, the art critic, coined a beautifully pregnant phrase that summarizes what we need in liberal education: a "tradition of the new." We need to make a tradition of innovation, of meeting the real intellectual and emotional needs of our students. One element in this need is just plain planning, and planning time for planning, as when the late Dean James Storing of Colgate University introduced a system of paying faculty members as if they were teaching summer school just to think and plan on their own and together during the summer. Curricular innovation itself must fit the characteristics of the institution: for example, the Amherst College system of stipulating only three required courses for the B.A. degree––Problems of Inquiry I, II, and III, in the sciences, humanities, and social sciences ––assumes that students already have skills for independent work. But there are some clues as to what will be productive in any institution or program.

Some industrial training programs are enormously successful, like IBM's introductory computer courses; some military programs work well, like English-as-a-foreign-language instruction; some commercial courses employ admirable teaching methods, like the Berlitz and Cortina language courses. Experimental schools such as the Nova School in Miami are worth looking at for any teacher; so are United States Office of Education programs such as the Project Social Studies curriculum development centers. We cannot afford to be too proud to look to sources like the military, business, and public school teaching for ideas. There are also ideas to be had right at home.

For example, some professors at my institution have been heard to complain that their students seem to be inordinately interested in sex and violence. One of our English professors took that as a cue and introduced two new courses, "The Sexual Revolution in American Literature," and "Violence in American Literature." Perhaps needless to say, they both are popular courses. Is it pandering to offer such courses? I'm sure some of my colleagues think so; but the courses deal with literature in terms of fundamental concerns felt by students, and they do it well.

Some students of ours have complained that they study public affairs and urban problems but never seem to be shown how to do anything constructive themselves. A political science professor who is also a lawyer came up with the idea of having them operate their own nonprofit corporation in low-income housing. They put on rock concerts or other events and use the proceeds as down payment to negotiate a split-equity mortgage on a run-down house. Through their corporation, they buy materials to fix up the house and then renegotiate a mortgage with a low-income family, under which the family works off the down payment by refurbishing the house. The family then owns decent housing, and the student corporation moves on to another one. They will also provide both information and pressure on housing to the mayor's office and the city council. Is this legitimate work for academic credit? I think it is more than legitimate, and it doesn't matter whether their discussions are called political science, sociology, urban studies, or business administration. It is preparation for a useful and rewarding life, and that is liberal education.

The upsurge of interest in "student-teacher dialogue" rather than the traditional professorial monologue is doubtless all to the good. Since we are engaged in an effort to help young people develop individuality, we need to go beyond that in acknowledging their need for individual treatment. All teachers notice that expectations have a way of fulfilling themselves: many a young person begins to be a successful student when convinced that some professor thinks he is a successful student. But we don't seem to expect much individuality of performance, and that may be why we don't see much of it developing. As a rule, only honors students and graduate students are led to believe that we expect them to be unique and special. The general run of students are still pretty much herded through their college experience. A new liberal education will have to encourage them to express themselves through designing and carrying out projects like the Student Housing Opportunity Workers (SHOW) corporation. For one thing, they learn to tell good ideas when they hear them. And that is liberal education.

Liberal education is based on one-to-one relationships between students and faculty. The standard of performance should never be determined by a grade curve, class ranking, or other impersonal device; rather, the student should attempt to identify what is best about every professor he meets and to excel him in terms of it. Forget about competing with other students, concentrate on your own development, and both your grades and your liberal education take care of themselves.

A true liberal arts professor recognizes the uniqueness of individuals and the fact that they are not comparable as people. There is to him no such thing as a "C student" or an "A student." Of course there are poor, shoddy pieces of work, and they are disappointing to any scholar. But he will characteristically employ the distinction Emerson makes between, say, a painter and a man painting. A painter, functionally defined as he is, may be quite deficient; so may a student in class. But a man painting or a man seeking to educate himself is first and foremost a man, and the liberal artist accords him respect. He cannot be graded as a man any more than he can have a price set on him. The more we function as whole persons in relation to one another, the more human, the more liberal, and the better our educational endeavor will be. If at last we fulfill the old spirit of liberal education, we will be constructing a new liberal education.

FOOTNOTE

[1] Harold Taylor, "The Idea of a College," in *Essays in Teaching* (New York: Harper and Brothers, 1950), p. 11.

What an Ideal Teacher Does

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It will be difficult to have an ideal college without ideal teachers. Although we might design an ideal curriculum and expect faculty to operate in its style, we would also have to expect that the faculty will act to change that curriculum to suit itself. In fact, if history is any guide, one would expect that eventually the curriculum would more nearly resemble the faculty's abilities and interests than any curriculum design.

So we might profitably speculate on what might characterize an ideal teacher for the liberal arts college of the future. *Speculate* may be too indefinite a word. We do know some things about what makes a good teacher, or at least I believe I know some of those things, to be more precise about it. And I also believe I know some things that will characterize the future college––a reduced emphasis on knowledge acquisition and an increased emphasis on the development of learning skills, for one thing.

Yet the ideal teacher is not so completely described by the theory or research of those who consider such questions that it can be offered with too much certainty. And the curriculum in which these teachers will have to operate is not so certain that we can plan ahead with complete confidence.

All this is to say that what follows is an estimate I am making on the basis of some thought and experience, and with the hope that we will all keep it open to alteration as new insights and data emerge.

I would like to make one other prefatory note about the ideas below. Some persons feel uncomfortable when I talk about an "ideal teacher." It seems to make them feel that I am being unrealistic and hopelessly simplistic. They are correct about this. But having an ideal type has advantages that seem to me to outweigh the disadvantages of unreality and simplicity.

An ideal teacher gives us a clear target to shoot for (useful when we are recruiting faculty), a standard against which to measure progress (useful when we are training teachers), and a convenient way of communicating a composite of a lot of disparate thoughts. Besides, ideal types suit my idealistic nature. Perhaps that's reason enough.

I see eleven general behaviors as exhibited by my ideal liberal arts teacher.

What an Ideal Teacher Does

1. He stands aside and gives students much of the control over their own education.

He knows that a student has to do his own learning, that teachers can only facilitate the process, and he knows that the college aims for self-directed learning and that that aim is furthered by giving students some control over their learning decisions. For those reasons, he stands away a bit from the student, giving him room and responsibility to act, although offering help, aid, and advice as that is perceived as being useful to the student.

The ideal teacher says, "I'd like to help you if I can," and not, "I want you to do this." He says, "There is this idea that you might profitably consider," and not, "Consider this idea."

2. He negotiates with a student when that student disagrees with a position taken by the teacher.

A faculty member may give students much of the control for learning, but never can give up all of the control. Students sometimes interfere with each other's learning. Sometimes they do not use learning time and resources well enough to meet minimum standards. Sometimes there is a specific disagreement in a specific learning situation. In such cases, my ideal teacher does what he can to engage the student in a rational problem-solving process. "Look, we disagree here. Is there an alternative action that would suit us both?"

Thus, a faculty member encourages a search for alternatives, a consideration of consequences, and tries to negotiate a settlement to the disagreement that all parties can agree upon. The teacher models an open, rational approach to interpersonal disagreement.

3. When he has to set limits upon a student's behavior, he does so without rancor or ambiguity.

Sometimes the negotiation process will not work. Then the teacher has to say, "Bill, I understand how you feel about this, but we cannot permit it because of XYZ." The limit is clear as to time and consequences and lack of deprecation. "It's not that we think less of you, it's just that we cannot permit that behavior."

4. He helps students keep perspective on time, personal and societal goals, and others' needs.

There is a tendency for students who are deeply engaged in a process to forget the context in which they are operating. Faculty members serve students well when they organize time and space and resources to facilitate the most learning by the most persons and remind students of elements in the situation that may have slipped their minds. "You said your goal was X, but I see you working only at Y." "I see that you support A, but A is in contradiction to the society's goal of B."

5. He listens to students and communicates to them that he understands what they say.

The communication process, upon which the teacher must rely so much, should begin with one person hearing the other. The ideal teacher is able to do this and communicate to a student that he has heard. This requires a nonjudgmental attention to what is said by a student, an acceptance of the student and his ideas, and a respect for his right to have those ideas. Although he may later judge a student's thoughts as unfortunate or erroneous, he first communicates that he understands the thought and the right of the student to have it. This applies as well to a student's feelings: often the teacher's best first step is to communicate that those feelings are understood. The teacher begins, not with, "What a crazy idea!" but with, "I hear you saying XYX. Have I got it right?" This listening skill is based in part on an empathic ability to see things from the point of view of the student.

6. He sometimes responds to students with comments designed to help the student clarify and expand his thinking.

The ideal teacher not only puts new ideas into the minds of students, but he helps students to clarify the ideas already in their minds. Thus, the teacher hears a student and then often responds in a manner designed to provoke thought. ("Have you considered this other point of view?" "What are your feelings about that conclusion?" "What conclusions do those feelings suggest?") It is often the reflective question, the nonjudgmental comment directed to what the student has just expressed, that stimulates the most thought and most helps the student to understand and learn.

This probably works so well because it takes a thought already in a student's mind and turns it into cognitive dissonance.

7. He clearly and pleasantly presents ideas or skills to students. A good teacher sometimes explains, models, shows how, and otherwise instructs students. He does this at times and in ways that please students. Part of this instructional skill is knowing the amount of the challenge or the size of the input to place upon a student. Sometimes a student will need instruction in small and easy doses, and sometimes a student will be better served by a large or complex presentation. The ideal teacher is able to adjust the type and size of his presentation to suit different situations.

8. He is honest and nonmanipulative. An ideal teacher does not subvert rational processes by indirect or dishonest communication. If he has a message to communicate, he does so cleanly and straightly. He says, "I think you should consider XYZ." He does not give that message through the more oblique question, "How would you like to hear about XYZ?" (Of course, the second question would be appropriate if, in fact, the teacher wanted to know the student's preference.) An ideal teacher does not say, "Are you listening?" when he means, "I sense you are not listening." He does not say, "Perhaps you should meet with another faculty member," when he means, "I don't feel comfortable working with you." He does not say, "Are you sure you read that book?" when he means, "I can't see how you could have read that book and given me the answers you have." When a teacher speaks honestly and directly, he permits any negotiation of differences to take place on a rational basis, something the indirect communication makes difficult, and he models the open, rational man that is one aim of a liberal arts education.

9. He is responsive to the emotional needs of students. Although the ideal teacher is honest, he need not be cruel. He withholds messages that, if communicated, would serve no useful purpose. ("I think you are funny looking.") He sometimes makes hurtful comments, but only in the service of a larger purpose. ("I predict that you will not be successful in your chosen specialty and might better study in some other area.")

In general terms, the ideal teacher knows that students have not only intellectual needs, but needs for security of surroundings, acceptance by others, and feelings of worth and power. He works to help students meet those needs in whatever ways he can.

10. He can operate effectively in a variety of situations with students and with colleagues.

The ideal teacher can work with one student, a group of students, and with one or several colleagues. He operates well in structured and unstructured situations. He is flexible, adapting to different situational needs as they emerge. He can take leadership and act as a collaborating team member. In short, my ideal teacher successfully performs the above nine behaviors in a variety of liberal arts college settings.

11. He himself learns and changes. Although my ideal teacher can do many things expertly, he grows in his abilities, he refines and changes in his style, and he improves in his overall effectiveness. When one observes this teacher over a period of time, we see that he is not the same person he once was. He learns from his experiences. He might be broader, or deeper, or more skillful, or more happy, but he is decidedly not unchanged.

A few concluding remarks: I have deliberately focused this paper upon what the ideal teacher does and not upon what he knows and feels. There are two key reasons for this. One is that I don't know as much about what an effective teacher must feel and know. I believe that the behaviors listed above tend to facilitate student growth, but I could not be as certain about what are requisite understandings or emotional states. Secondly, I do not want to make any assumptions that there are any particular cognitive or affective prerequisites to ideal teaching behavior. I want to leave open the possibility that many backgrounds can nourish the same ideal, in case that happens to be true.

Finally, there is no presumption intended that all teachers in a college have to be ideal in all of the above behaviors. Even the ideal college will probably have to be satisfied with having ideal behaviors represented by the aggregate of the faculty, and available to each student from one faculty member or another.

Comment on Liberal Education: Remarks on Papers by Thomas F. Powell and Merrill Harmin

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Continuous consideration should be given to the content of the liberal education program, as well as to the most effective means of presentation. With the passage of time, questions concerning program scope and content have become ever more critical because of continuing increments to the body of knowlege which confronts us. Simultaneously, general public acceptance of the ideal of mass education at the college level available to every economic and social segment of the population makes it mandatory that we discover and utilize organizational approaches and methods equal to the task. Here we deal with the existence of an educational structure which has emerged and developed within the context of an entirely different set of circumstances.

It seems to me that discussion of a "New Liberal Education" must in some way focus on the problems mentioned above. For my part, however, I should be sorry to see an emphasis on "new" result in further erosion of the concept of liberal education itself.

To some extent the degradation of the concept of liberal arts education in recent years reflects an increasing emphasis upon the physical sciences (a problem of balance) as well as an almost overwhelming acceleration in the accumulation of knowledge in virtually every field of learning. While many educators have tried very hard to maintain order in their portions of the educational spectrum, it is difficult to avoid the conclusion that the quality of undergraduate education has suffered from the felt necessity to refine the subject matter and narrow the objectives of given areas of instruction. However heroic the efforts of professors to avoid imbalance and isolation, the general result has been one of fragmentation and disorientation in the undergraduate experience. Too frequently we encounter the depressingly mechanical process in which students move from one course to another, accumulating points toward a degree that does not really represent a milestone in the continuing journey toward intellectual and emotional maturity. I do not say that students cannot obtain a liberal education on the average university campus. Some do, because the possibility is there. But the odds are frequently against this happy result because both the dynamics that control professional academic mores and the organizational pattern within which business is conducted tend to work against it.

In effect modern college education often chooses and defines problems and then thrusts answers upon students before they are really aware of the need to ask questions. Again, pressures generated by the proliferation of knowledge and the continuing refinement of instructional responsibility probably determine this approach to the educational undertaking. Beyond this the answers themselves have a high rate of obsolescence because the questions proceed from circumstances that rapidly pass from view. Liberal education will not supply all of the answers; it should not be expected to do so. Its function should be the more enduring one of exposing students to a developmental understanding of the bases of civilization as a foundation from which they can perceive answers of their own. Encouragement of inquisitiveness, stimulation of imagination, training in habits of mind that discipline intelligence––these are worthy and attainable goals of liberal education.

The overshadowing of liberal education can further be traced to conditions created by a rapidly expanding, extremely sophisticated technology, and a consequent preoccupation with career or practical aspects of the undergraduate learning experience. An unspoken but widespread assumption has arisen that the liberal studies, because of their supposed nonutility, are a luxury that cannot be supported except by a small expenditure of lip service. It is necessary to point out that such attitudes are a measure of the distance that we have drifted away from an understanding of the nature of liberal education. In recent years eloquent and persuasive voices have placed it in its proper perspective, but none, I believe, has stated the matter more gracefully than John Henry Newman in his illustrious discourse on "The Idea of a University" more than a hundred years ago.

> There is a duty we owe to human society as such, to the state to which we belong, to the sphere in which we move, to the individuals towards whom we are variously related, and whom we successively encounter in life; and that philosophical or liberal education, as I have called it, which is the proper function of a University, if it refuses the foremost place to professional interests, does not postpone them to the formation of the citizen, and while it subserves the larger interests of philanthropy, prepares also for the successful prosecution of those merely personal objects which at first sight it seems to disparage. . . . If then a practical end must be assigned to a University course, I say it is that of training good members of society. Its art is the art of social life, and its end is fitness for the world.

While I realize that it is not fashionable to speak of education as being useful in preparation for citizenship, I believe, with Newman and others, that the more attenuated objectives of education will become largely meaningless unless this end is properly served. The frank acceptance of this point of view and its application would be tantamount to a revolution in educational circles.

But let it be clear that I do not accept the idea that liberal education is devoid of vocational significance. No more than a superficial observation reveals that the modern economy pursues a relentless, too often fruitless, quest for "educated" men and women who can with relatively brief indoctrination master the special procedures and techniques which enable them to serve in remunerative and productive capacities.

Liberal education has other important utilitarian values. Foremost among them certainly is its function of preparing students for professional training, for the mastery of specialized knowledge and skills, whether these be scientific, humane, or commercial in their direction and application. Again I enlist Newman as spokesman for the position that I advance.

> General culture of mind is the best aid to professional and scientific study, and educated men can do what illiterate cannot; and the man who has learned to think and to reason and to compare and to discriminate and to analyze, who has refined his taste, and formed his judgment, and sharpened his mental vision, will not indeed at once be a lawyer, or a pleader, or an orator, or a statesman, or a physician, or a good landlord, or a man of business, or a soldier, or an engineer, or a chemist, or a geologist, or an antiquarian, but he will be placed in that state of intellect in which he can take up any one of the sciences or callings I have referred to, or any other for which he has a taste or special talent, with an ease, a grace, a versatility, and a success, to which another is a stranger. In this sense then, and as yet I have said but a very few words on a large subject, mental culture is emphatically useful.

Liberal Education for World Citizenship

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I am quite sure that most of us are aware that something is radically wrong with our contemporary systems of education and that effective steps to put things right are more than necessary. While some people feel that some adjustments here and there in the existing systems would be quite adequate, my own views are much more in accord with the thinking of those who see contemporary Western education as a conglomerate of so many fallacies and inconsistencies, so many inadequacies and irrelevancies, an uprooted tree hanging in midair that no longer has any real contact with earth, through which no more sap flows, and whose fruits are as bitter as they are poisonous, although its leaves and branches may still offer some protection from the rays of the sun at noon.

At the heart of this perversion we find a whole brood of irreconcilable theories and ideas, along with more than a suspicion of a lack of scruples and the absence of principles which indicate a soullessness that is frightening to a degree. It has been truly said that teaching a man all the classified phenomena within the bulging archives of science and sending him forth devoid of grace and human kindliness is, in effect, launching a monster of Frankenstein upon the world. Twentieth-century history offers eloquent testimony in support of that truth.

But we are not facing a situation that is unique in the history of man. Brubacher quotes the following passage from Aristotle's *Politics,* which was written twenty-five hundred years ago:

> As things are . . . mankind is by no means agreed about the things to be taught, whether to look to virtue or the best life. Neither is it clear whether education is more concerned with intellectual or moral virtue. The existing practice is perplexing: no one knowing on what principle we should proceed––should the useful in life, or should virtue, or should the higher knowledge be the aim of our training; all three opinions have been entertained. Again about the means there is no agreement: for different persons, starting with different ideas about the nature of virtue, naturally disagree about the practice of it.[1]

As Brubacher points out, we are in the same position today for precisely the same basic reasons; two of the main factors are international wars and domestic political strife. He comments: "Consequently people today, as twenty-five hundred years ago, are raising the age-old questions about how to educate their children for the dynamic social conditions in which they live" (2). But then he adds: "If their answers are confused and faltering, there should be no occasion for surprise; uncertain times give rise to uncertain answers" (2).

Perhaps in 1939––when Brubacher's book was first published––it was the parents who were asking pertinent questions out of concern for their children. Today, it is the "children"––the young ones––who are asking questions in the most direct and uncompromising manner and are not at all disposed to listen to uncertain answers for one second. Obviously, uncertain times give rise to equally uncertain answers; but uncertain times must have been caused by other factors, and our contemporary systems of instruction, which we have come to regard as being synonymous with "education," must be regarded as one of the main causes, if not the most directly affective cause of all causes. Uncertain answers today should occasion, not surprise, but dismay and disquietude and deep concern, for we are like a swimmer who finds himself being carried away by a strong tide into the middle of the ocean. In my view, we have to replace the current systems of education with something much more valid, much more meaningful in practical terms, much more relevant to the individual human being––in terms of his identity as the multiple-bodied sentient creation of the Forces of Life, in terms of his place, his duty, and his destiny in a universe that itself is alive and dynamic.

The type of educational system that is at all likely to produce this kind of result is, necessarily, one that is based on the humanities, with particular emphasis on the arts; in short, a liberal education, as it is sometimes called. But even so, a liberal education that stops short at its own boundary line is just as certain to produce a highly unsatisfactory, one-sided development as any other system of education.

There is a good deal of horse sense expressed by March Phillips when he stresses that

> the main characteristic of modern life is the world-wide scope and breadth of its knowledge, its research, its appreciation. We cannot ever again concentrate exclusively on a life or an art entirely spiritual or entirely intellectual. The necessity is forced upon us, by our outlook, our point of view, our whole culture, of being "whole" in a new sense, whole, that is to say, not in the sense of being wholly devoted to the things of the soul or of the mind, but as including both these in our estimate of a whole man.[2]

Phillips was writing in 1915, during the First World War, and he was concerned primarily with art. Some of the views he expressed in his book may well seem to require a measure of reexamination today, after two world wars, with the ever present threat of a third atomic war. Nevertheless, so much is of great value in his book; so much is relevant here.

For example, Phillips distinguishes between the Eastern point of view, and the Western point of view. While the Western manifests in an intellectual understanding through form, it is emotional understanding through color that is characteristic of the Eastern, which regards the soul as the source of all wisdom, "the essential knowledge which shines within the heart." But––in his words––

> The soul itself cannot be known; its nature is not subject to any analysis that can be brought to bear upon it; for the source of perception can never itself be perceived. "Thou canst not see the seer of seeing, thou canst not hear the hearer of hearing, thou canst not comprehend the comprehender of comprehension, thou canst not know the knower of knowledge." But just as the eye which cannot see itself is that which sees all that is seen, so the soul, itself incomprehensible, is that which comprehends all that is comprehended. . . . To an emotional people, spiritual consciousness is far more than reason. . . . It is customary for religions to depend more or less on externals, on historical evidence, on the testimony of miracles, on the continuity of tradition, on a recognizable, visible authority. But the appeal of Hinduism is to nothing but spiritual consciousness, to the Soul or Knower. All that is offered for acceptance is evolved out of the Soul and is verifiable by the Soul. In that way only is it verifiable. Reason and argument cannot handle it, for these are incapable of apprehending the spiritual. Do you ask a Hindu for proof that his thought is true? "Look into your own soul," he will answer, "and read the proof written there." [28-29]

To the Western point of view, on the other hand, "form and function are one," and "form is merely the image of function." Phillips recognizes that sometimes there is a departure from this ruling motive, in the spirit of imaginative exuberance or playfulness, as in some of the decorative detail of Gothic ornamental sculpture; but, he says, "these are liberties which a creative age permits itself. The main lines and framework of the structure remain rational and perfectly expressive of the part they are playing, while the non-structural detail is allowed a measure of licence and by-play in the pursuance of its fancies" (47); a departure from the ruling motive is an infallible mark of "corruption and decadence."

> In short, it may be said that the architectonic instinct of the West is intellectual in its essence, for it is based and founded on the idea that an intellectual conception of the various activities which make up a building is the means by which the appropriate formation of its structural features is attained. [48]

This same author places the switchover from the Eastern to the Western point of view at a historical point in time, and with the Greeks. According to him, "the reliance on human intelligence, which is the inspiration of classicalism, is the Greek gift to the world. Professor Butcher is very explicit on this point. 'It was the privilege of the Greeks to *discover* the sovereign efficacy of reason' " (128). Phillips held the view that the virtuous and blameless Socrates was guilty of only one thing; his philosophy that we can not know and do not know the very things that we think ourselves most sure of knowing, was subversive to the virtue which the Greeks of his time saw in the intellectual faculty. Therefore Socrates was guilty of "corrupting the youth," and for this his life was forfeit.

He also commented:

> The infallible test of intellectual activity is the assertion by man of his superiority to his surroundings; his assertion, that is to say, of his right to control and alter and adapt to his own wishes the material circumstances in which he finds himself. This must always be so; for intellect being the power which comprehends the universe and its laws––in other words, intellect being the power which gives man control of his surroundings,––it follows that the development and cultivation of intellect will awaken in man the consciousness that he possesses this power and the desire to use it. *It is scarcely necessary to point out in support* of what is so obvious that every intellectual age has been primarily remarkable for its keen interest in all mundane forms of knowledge, and is to be distinguished by its progressive action and the constant changes and alterations in the environment of life which naturally follow from the perception that man is the controller of circumstances. [129]

But this Western point of view is full of flaws. Far from intellectual man being the controller of circumstances, in the end circumstances hold the intellectual man in their harsh and unrelenting grip. That arrogant conceit which is the besetting sin of the intellect is very much in evidence in the above ideas, among them the idea of man being "superior" to his surroundings. But intellectual man can, and does, *tamper* with his surroundings and with circumstances; always with dire results, for every problem he seems to solve gives rise to a whole series of new problems, more difficult to cope with than the original problem.

A chapter was in fact devoted to "Intellectual Limitations" in Phillips's book, and over this chapter the author had written: "the conflict of intellectual and emotional tendencies as seen in real life, and in the people among whom we live, and *the mental atrophy which a rigorous and exclusive cultivation of the intellect tends to produce"* (259; italics mine).

In that chapter, he cited two interesting case histories: George Eliot, the novelist, and Darwin, the scientist. George Eliot spent ten years––from her twenty-fifth to her thirty-fifth birthday––studying such writings as Strauss's *Life of Jesus,* Mackay's *Progress of the Intellect,* and others like them. Up to 1861, by which time she was forty-one, her work was still conditioned by the emotional faculty as a dominant characteristic; but her involvement with "all that was most rigidly intellectual in the strenuous scientific society of her day" eventually began to take its toll, and from her novel *Romola* which she began in 1861, "intellectualism asserted its control over her spontaneous and emotional gifts, a control which was never relaxed. She never henceforward recovered the warm, natural flexibility of her first books" (262). Of the novel

Romola she said herself that she began it a young woman––she finished it an old woman. Clearly she was aware that intellectualism had insulated her whole being against the creative essence of life, which is above all things plastic. It is a tragic price to pay.

The reference to Darwin seems to me so important that I give a direct quote of one paragraph:

> It was the growth of the modern habit, the habit of passing all ideas through the intellect, which was drying up in George Eliot the source of emotional intuition. The same process and the same results are visible among many of her contemporaries. It is almost horrible to watch how, as the habit of reasoning absorbed him, the capacity for all spontaneous feeling became atrophied in Herbert Spencer. In the same way Darwin points out himself by what degrees the emotional faculty was done to death in him by the exclusive cultivation of the intellectual faculty. His curiously impartial evidence is well worth quoting. "Up to the age," he says, "of thirty or beyond it, poetry of many kinds, such as the works of Milton, Gray, Byron, Wordsworth, Coleridge, and Shelley, gave me great pleasure, and even as a schoolboy I took intense delight in Shakespeare, especially in the historical plays. I have also said that formerly pictures gave me considerable, and music very great delight. But now for many years I cannot endure to read a line of poetry. I have tried lately to read Shakespeare, and found it so intolerably dull that it nauseated me. I have also almost lost my taste for pictures and music." Neither, he goes on to say, does fine scenery yield him "the exquisite delight which it formerly did"; and in general he has to lament the shipwreck of one whole side of his nature. He is conscious of his loss. "My mind," he says, "seems to have become a kind of machine for grinding general laws out of large collections of facts"; and the result has been "the atrophy of that part of the brain alone, on which the higher tastes depend." At the same time he feels that the preservation of the lost faculty was originally within his power, that its extinction is due to neglect and the over-cultivation of intellect. "If I had to live my life again," he concludes, "I would have made a rule to read some poetry and listen to some music at least once every week; for perhaps the parts of my brain now atrophied would then have been kept active through use." [263-64]

Again a tragic price to pay, particularly for that which dries up the emotional faculty in the individual and turns his brain into "a kind of machine for grinding general laws out of large collections of facts." The intellect is a dead loss in the search for any type of a "togetherness-relationship," and it is its heavy hand on the systems of education in contemporary Europe that has turned the whole thing into a horrible perversion, perhaps the major factor in creating and sustaining international wars and domestic strifes of all kinds––political, economic, and religious.

In his introduction to *Asiatic Mythology,* Paul Louis-Couchoud quotes Maeterlinck as distinguishing sharply between the Western lobe and the Eastern lobe of the human brain, and as stating: "The one here (i.e. the Western lobe) produces reason, science, consciousness; the other yonder (i.e. the Eastern lobe) secretes intuition, religion, the subconscious. . . . More than once they have endeavoured to penetrate one another, to mingle, to work together; but the Western lobe, at any rate the most active expanse of our globe, has heretofore paralyzed and almost annihilated the efforts of the other. We owe to it (i.e. the Western lobe) extraordinary progress in all material sciences, but also catastrophes, such as those we are undergoing today. . . . It is time to awaken the paralyzed Eastern lobe."[3]

Then there is a science of numbers, known as numerology in Western European esoteric circles, the members of which are "less than the dust beneath the chariot wheels" of the true academician in his smug self-sufficiency, and as the science of numbers among the Bantus of Africa. Western European numerology regards the number *2* as the number of antithesis, of division, of separation, of differentiation, of schism; its effect is to dissociate, to sever, to cleave asunder like a sword, to separate; it is disruptive and divisive; being an even number, it always operates on the physical plane; it is the symbol of duality, the number of contrasts and of pairs of opposites—good versus evil, truth versus error, day versus night, heat versus cold, joy versus sorrow, health versus sickness, pleasure versus pain, male versus female (that is to say, in opposition), light versus darkness, and so on; for this reason it is sometimes called "the beginning of evil," and it manifests itself among us humans through that attitude which recognizes the "we" as distinct from and opposed to the "not-we"—or the "us" and "the enemy."

The science of numbers of the Bantus calls this same number *2, Kubili,* and regards it as a very evil number, the symbol of imperfection, representing dissension and diversity of opinion or disunity. Both systems come up with the same findings, each system independently.

I have often used the history of the Organization of African Unity (OAU) to provide a classic example of the way this number *2* operates among humans. It will bear repetition here, and it is, moreover, the best illustration I have at my disposal in the circumstances.

The OAU rested on the premise that the "whites" had been guilty of all the sins in the calendar: imperialism, colonialism, exploitation and social degradation of the blacks; therefore, the blacks in the African States had to unite "to restore the dignity of man." But by this premise the founders of the OAU had divided humanity into two distinct camps: the guilty whites and the innocent blacks, in direct opposition. By so doing, they opened the door wide to this number *2,* the ***Kubili*** of the Bantus, and came under its baneful influence which dogged their steps at every turn.

First the member states of the OAU established the principles of national sovereignty and of nonintervention in what was termed "the internal affairs" of any member state. Here we have another twofold division, this time that of "authority," which set that inhering in "national sovereignty" and in "internal affairs" over and against that inhering in the OAU itself. The result was, of course, to turn the OAU into a mere debating club, with a ceiling on the kind of subjects that could be debated! They thus turned the OAU into something closely resembling the premature baby of an ailing, disease-ridden woman; but it was *Kubili* on their tail.

The African States that attempted to constitute the OAU soon split into two groups: the Casablanca and the Brazzaville groups; the attempt to reconcile their differences resulted, paradoxically enough, in the formation of yet a third group, the Monrovia group.

Within the OAU itself, it was one division after another. Its member states soon split into two subgroups: the functionalists—who advocated a gradual integration of economical and technical institutions; and the revolutionaries —who advocated a beginning on the political plane. Although eventually the OAU came under the control of the functionalists, this same group split further into the militant group, which urged rapid action, and the cautious group, which wanted patient and gradual growth.

Finally, as against the OAU itself, we find "the anachronistic nationalists," which consisted of those member states that paid mere lip service to the OAU, on the basis that it was more profitable to join the OAU than to fight it. It is not an exciting record, but the thing I am after here is to exemplify how this number *2* operates, as a divisive force, in the affairs of men.

Now the very nature of the intellect is analytic, a breaking down in order to "know," a fragmentation of that which is whole in order to study its parts piecemeal, often in the fond assumption that by adding together the results of the fragmented study a knowledge of the whole will result. This is an opium smoker's dream, despite the eulogies, which abound almost everywhere one turns, on so-called interdisciplinary or multidisciplinary studies as constituting virtually the gateway to the Hall of Wisdom.

In actual fact, however, the intellect establishes its identity by first recognizing the "I" as being distinct from the "not-I," becoming thereby a vehicle for that same *Kubili,* the number *2* which, in Western European numerology, is the beginning of evil. And so indeed it is. For D. H. Lawrence was right on the ball when he remarked that when we know one another in apartness, and not in togetherness, then every man becomes a menace to every other man; that while we then talk glibly about "kindness," underneath that kindness we find a coldness of heart, a lack of heart, a callousness that is very dreary. In time, and inevitably, as that knowing-in-apartness becomes transferred from individuals to groups of individuals who, for one reason or another, feel menaced by other groups, we find that class consciousness and class hate become rampant; we have produced hostile groupings of men for the sake of opposition and strife. "Civil strife becomes a necessary condition of self-assertion." Hardly anything could be more apt in the world we live in today; hardly anything could merit closer and more sustained attention at this moment: May 1970, right here in the United States of America.

This is highly relevant to the field of education, which is our primary concern; for Brubacher records in the very second page of his book that basically there are two opposing schools of thought on education. The progressive school believes that the aim of education should be the constant reconstruction of experience and, therefore, that the curriculum should be constantly rearranged according to its usefulness in meeting each crisis as it arises. The other school, the essentialist, would select curriculum by a yardstick of value which transcends mere current utility. I gather from Brubacher's book, and I think rightly, that there is no love lost between the two schools of thought, that one is more likely to succeed in driving an automobile to the moon than to reconcile these two schools of thought, and that the various "philosophies of education" we now have on the market (as outlined by Brubacher in the same book) have arisen from the basic differences in outlook and in attitude between the progressives and the essentialists; in other words, the same number *2* has produced the same kind of results described above in the OAU.

But, of course, it would be a mistake to consider that any one *Kubili* is precisely the same as any other *Kubili,* for here––as everywhere in nature––there is a hierarchy. In my view, the *Kubili* responsible for the two schools of thought in the field of education is a mere junior god. The high god in this particular hierarchy seems to me to be that *Kubili* responsible for the duality in the intellectual mind of man, without which the diversity of views on the educational philosophy that must be regarded as valid would not have arisen, or alternatively if it had arisen, would not have been a basic issue on which no compromise could be found. This latter *Kubili,* the grand old man of this tribe, is the atrophier of the intuitional mind of man and the seducer of the divine element in the intellectual faculty of man, with the result that it can look at the term ***philosophy*** and equate it with a kind of super common sense. This makes it possible to talk about "philosoph*ies*" of education.

There is, of course, but one philosophy of education, although it may be expressed in a number of ways. A fine example, which I have used innumerable times, comes from Manly Palmer Hall's *Man: The Grand Symbol of the Mysteries.* In the chapter "Restating the Theory of Education," we find ***inter alia:***

> Not to kill out idealism but to make the world safe for ideals is the true purpose of education. . . . True education is learning how to build an adequate foundation under the ideals of the race. In the Dark Ages, education was liberation from bondage to superstition. In this still darker age, education must liberate itself from materialism––the most miserable superstition of all. The tools indispensable to the race are the higher aspects of philosophy ––aesthetics, ethics, and metaphysics. For what shall it profit a man to become the most skilled of artisans, if his hand is not apprentice to a creative vision? Education means the release of ideals and the determination of spiritual values. To the degree it falls short of this legitimate end, education fails to educate.[4]

In *First Principles of Philosophy,* Hall outlines philosophy as properly embracing the seven areas of (1) metaphysics, which includes theology, cosmology, and the nature of being; (2) logic, or the doctrine of reasonableness; (3) ethics, or morality and character, and the discovery of the nature of good; (4) psychology, or the whole field of mental phenomena; (5) epistemology, which is concerned primarily with the problem as to whether knowledge in itself can exist in an absolute form; (6) esthetics, or the science of the reactions caused by beauty, harmony, elegance, and nobility; and (7) theurgy, the actual process by which one becomes a philosopher, or the living of wisdom.[5] Nothing could be further removed from any kind of "common sense"; the problem here is, at least to some extent, that so often we tend to substitute an intellectual concept of "philosophy" for the real thing. But, of course, a changeover to a liberal education can not, and would not as such, resolve the problems already indicated above. It might very easily change the nature of these problems, without in any way decreasing—–much less neutralizing—–their intensity or their enervating effects; whereby we have gained nothing.

The mission schools in West Africa in the early years of this century were not only "liberal" in type, they also gave substantial attention to ethics, through lesson-periods in bible study and moral instruction, periods which had top priority. Even so, African States on the West Coast of Africa have had their grave problems, as we all know, in spite of the fact that a very high percentage of the national leaders in these states were products of these same mission schools.

Of course it could be said, and with good reason, that by summarily rejecting the traditional culture of Africa and seeking to destroy it, the missions thereby deprived their own educational systems of having any roots in the hearts and minds of their willing pupils, and that the magnificent work they did through their mission schools can only be likened to a house built on sand which could not, therefore, weather the storm that the African States had to face later in their history. We can also say, of course, that by seeing the traditional religion of Africa as being distinct from and opposed to their own, they brought themselves under the influence of this same *Kubili.* Not without cause do the wise ones say: Thou shalt not blaspheme the Name by which another knows his God.

We have also to consider that liberal education by itself is inadequate; for while the Western point of view—–or an intellectual understanding through form—–eventually creates an impassable barrier between ourselves and the higher states of experience, as we saw clearly in the reference to Darwin above, the Eastern point of view—–or an emotional understanding through color—–weakens our grasp of the conditions under which we have to live on this planet and seriously limits our capacity for dealing with the physical problems of our day-to-day life.

Two examples may enable us to see this flaw in liberal education more sharply and in depth. I refer, first, to *The Spirit of Chinese Philosophy,* by Fung Yu-Lan, where he states that in the view of that philosophy, man's life is distinguishable into spheres of different grade, namely, (1) the unself-conscious, natural sphere; (2) the utilitarian sphere; (3) the moral sphere; and (4) the transcendent sphere.[6] The man of sphere 1 is a creature of unquestioning natural instincts, following the customs of the society in which he lives, or his natural tendency, or his personal habits, without reflection. He never asks why he acts as he does, and indeed he is not conscious that his actions are what they are. This sphere of human life is *the sphere of human innocence.* The man of sphere 2 is aware of himself as distinct from other men, and thus he seeks his own greatest advantage exclusively, concentrating on increasing his personal property, or improving his position, or getting a good reputation, whether in the immediate future or after his death. This sphere of human life is *the sphere of egoistic profit.* The man of sphere 3 is aware of himself as a member of society, the society being the whole of which he is a part. His actions are therefore exclusively for the good of the society, and thus he discharges his "duty" to his society, to which he is devoted, rejoicing in his society's joy and sorrowing over its sorrow. Here we have moral action, and this sphere of human life is *the moral sphere.* The man of sphere 4 is aware of something above society, namely, the universe; he realizes that whereas society is a whole, the universe is the Great Whole. "The action of such an individual will be exclusively for the sake of the universe; he will devote himself to the Great Whole, rejoicing in its joy, but not sorrowing over its sorrow, because the Great Whole has nothing over which it can sorrow" (xiii). This sphere of human life is *the transcendent sphere.*

Of these four spheres, the first two, i.e., the natural and the utilitarian spheres, are the outcome of things being left as they are. The third and the fourth spheres, i.e., the moral and the transcendent spheres, are the results of cultivation. The first two spheres are the gift of nature and are the lower spheres. The last two spheres are the creation of man's spirit; they are the higher spheres and owe their existence to a deeper understanding of man's life and to a higher state of self-consciousness in man with regard to his own actions. In other words, these two higher spheres owe their existence to higher knowledge.

In terms of this first illustration, we might say that the early mission schools in West Africa may indeed have reached the moral sphere, but they did not go beyond that. While the mission school may have inculcated the habit of acting for the good of society, trouble ensues for as long as that society is not seen as part of the Great Whole, to which other societies rightly belong, but is taken to apply to one's race or nation or tribe or family, thus leading to racism, or to that narrow nationalism which sees all other nations as vagabonds and thieves, or to tribalism, or to nepotism. In other words, a liberal education cannot by itself produce the man of the transcendent sphere, who alone is capable of becoming a world citizen in the proper understanding and practical application of that term.

The second reference is to Arthur Waley's *Three Ways of Thought in Ancient China,* where he related the story of Confucius, who once visited the sage Lao Tzu, to whom he said:

> I have edited the Songs, the Book of History, the Rites, the Canon of Music, the Book of Changes, the Chronicle of Springs and Autumn,--six scriptures in all,--and I think I may say that I have thoroughly mastered their import. Armed with this knowledge, I have faced seventy-two rulers, expounding the Way of former kings, the achievements of Chou and Shao; (of the 12th century B.C.;) but there was not one ruler who made the slightest use of my teaching. It seems that either my hearers must have been singularly hard to convince, or the Way of the former kings is exceedingly difficult to understand.

Lao Tzu replied,

> It is a lucky thing that you did not meet with a prince anxious to reform the world. Those six scriptures are the dim footprints of ancient kings. They tell us nothing of the force that guided their steps. All your lectures are concerned with things that are no better than footprints in the dust. Footprints are made by shoes; but they are far from being shoes![7]

It seems to me that we could justifiably compare both liberal education and the mission school education referred to above, to Confucius. Each was unable to see beyond the footprints in the dust. For an even more liberal type of education was practiced by the ancient Greeks, and it would be well worthwhile to take a brief look at the Greeks at this juncture.

The reference here is to *The Greek View of Life,* by G. Lowes Dickinson, which was first published in 1896 and ran through eighteen editions by 1932. Dickinson informs us that poetry was the basis of the education of the Greeks, the guide and commentary of their practice, and the inspiration of their speculative thought. He quotes Plato:

> When the boy has learned his letters and is beginning to understand what is written, as before he understood only what was spoken, they put into his hands the works of great poets, which he reads at school; in these are contained many admonitions, and many tales, and praises, and encomia of ancient famous men, which he is required to learn by heart, in order that he may imitate or emulate them and desire to become like them. Then again the teachers of the lyre take similar care that their young disciple is temperate and gets into no mischief; and when they have taught him the use of the lyre, they introduce him to the poems of other excellent poets, who are the lyric poets; and these they set to music and to make their harmonies and rhythms quite familiar to the children's souls, in order that they may learn to be more gentle and harmonious and rhythmical, and so more fitted for speech and action; for the life of man in every part has need of harmony and rhythm.[8]

The above picture is rounded out, I think, by Lewis Mumford:

> Participation in the arts was as much a part of the citizen's activities as service on the council or in the law courts, with their six thousand judges. Each spring festival brought a contest between tragic dramatists: this called for twelve new plays annually, with the participation of one hundred and eighty choral singers and dancers; while each contest in comedies demanded sixteen new plays yearly and a hundred and forty-four choral singers

> and dancers. In the hundred years of the Empire, Ferguson tells us, two thousand plays of picked quality were written and staged in Athens, while six thousand new musical compositions were created and presented.
>
> These esthetic activities demanded participation on an even greater scale than in the mystery pageants and miracle plays of the Middle Ages: every year something like two thousand Athenians, it has been estimated, had to memorize the words and practice the music and dance figures of a lyric or a dramatic chorus. This was an intellectual discipline as well as an esthetic experience of the highest order; and as an incidental result no small part of the audience consisted of ex-performers, expert judges and critics as well as enthralled spectators.[9]

Other authorities have drawn attention to the fact that to the Greeks, music was such an important subject that they evolved what has been termed the doctrine of ethos, which cannot be reexpressed in contemporary terms, but which embodied their firm conviction that every melody, every rhythm, and every instrument had each its own particular effect on the moral nature of man and of the state. Good music promotes the well-being of the state; bad music destroys it. Furthermore that there were clear recognizable correspondences between sounds, tone combinations, and cosmic phenomena ––such as the seasons of the year and parts of the day, the cycles of the sun and of the moon, growth and weather, man and woman, birth and death, healing, reincarnation, etc.

The Greeks also held that music can decisively influence the will in one of three ways: it can spur the will to action; it can lead to a strengthening of the whole being, just as it can undermine mental balance; and finally, it is capable of suspending entirely the normal will power, so as to render the doer unconscious of his acts. The point here is that in spite of this very "liberal" education, the Greeks never would combine; to the Greek his city-state was the universe, and other city-states were interlopers. In time, Greece sold herself into slavery under the barbaric Romans. Her "liberal" education had taken her to the uppermost reaches of the moral world, but she had never made it to the transcendent world. So much time has been spent on this point, because it is in the highest degree important that we do not fall into the costly error of imagining that all we have to do to put right what is wrong in our current systems of education is simply to reject the intellectual outlook in favor of the emotional understanding through color, or the "liberal" education.

It was the fact that the reverse took place in Greece that led to her decline and enslavement by Rome. My "bible" on this fascinating story is Mumford's *City in History*, already cited.

In brief outline, while Greece was committed to the Eastern point of view, the *heart* of the city, "the center of its most valued activities, the essence of its total existence, was the acropolis; for the acropolis was above all the home of the city's gods, and here were all holy offices derived from nature and history" (160). Indeed, "for a brief generation in Athens, the ways of the gods, the ways of nature, and the ways of men, came close to a common point" (166). And of course the first thing the Greeks did when they founded a city was to "put the gods in their shrines."

On the other hand, during this same historical period, even the city of famed Athens was dry and ill-supplied with water; the streets were narrow, miserable old lanes that had no paving to keep the mud down in spring or the dust in summer; the houses were quite unpretentious, and the quarters of the rich and the poor existed side by side; the lack of sanitary facilities was "scandalous, almost suicidal"; there was a lack of system and an absence of order insofar as the conditions of everyday living were concerned. Poverty was extolled above riches, and there was contempt for trade. This was Hellenic Greece.

But from the seventh century B.C. onwards, and with the introduction of gold and silver stamped coins as the new medium of exchange, the economic life of the Greek city aroused itself and began to expand. City planning became almost a necessity. Mumford says,

> The failure to moralize trade and bring its goods, under suitable restraint, into the province of the good life was perhaps as serious a source of the Hellenic disintegration as the spread of slavery or the failure to cope with the successive assaults of swollen empires. Almost from the moment of creating the polis, the Greek had never been able to rectify his image of a noble, leisured life as essentially that pursued by the Homeric aristocracy. This image left out the trader, the banker, the hand-worker, the shopkeeper, all in fact who were needed to produce the economic surplus by other means than naked exploitation and robbery. Without that surplus, neither leisure nor democracy could flourish.
>
> By failing to turn the businessman into a citizen, the Greek eventually turned the citizen into something worse than a businessman: first the insolent conqueror and exploiter, then the subservient subject, the cringing pedagogue, the cadger and bootlicker, the refined parasite, whose name became a byword of contempt among the Romans, much as they admired and copied the classic Greeks. [154]

And so, the Greeks went––in one of the choice phrases which make Mumford's book such pleasurable reading,––"from supple 'disorder' to regimented elegance"; the Hellenic Greece had become the Hellenistic Greece.

This is much more than a mere playing with phrases. For "as the inner life of the Greek city disintegrated," so we learn from Mumford, "the outer aspect of the city showed a far higher degree of formal order and coherence" (197). The Greek city had become, "not the city of culture but the city of commerce and political exploitation: not the city of free men but the city of insolent power and ostentatious wealth" (197).

In Hellenistic Greece, the Greeks had forgotten the acropolis and the gods, for they had found a new god in the city that they had created.

> They lost hold of the greatest gift of divine experience, which is the impulse and the capacity to transcend natural limitations. As technological organization and wealth in-

> creased, the ideal purpose of the city no longer found expression in the daily life. Even the mind was starved, not for lack of food, but by being overfed with depleted and sterile nutriment. The museum and the library took precedence over life and experience; academicism replaced the organic balance of the original academy; collection and classification became the chief avenues of intellectual activity. The proliferation of devitalized knowledge, knowledge treated as a substitute for responsible action, not as an instrument of life, properly takes its name from the great metropolis of Alexander. "Alexandrianism" brought such knowledge to heights rivalled only by the suavely empty productions fostered by the great educational foundations of our own time." [189]

But there were those Greeks who were profoundly disillusioned with the fundamental premises of civilization, with its emphasis on power and material goods, its acceptance of grade and rank and vocational division as eternal categories, the injustices, the hatred, the hostility, and the perpetual violence and destructiveness of its dominant class-structured institutions; by the degradation of life to the servitude of the body, its destruction of spontaneity by vacant routine, and the misappropriation of the higher goods of life by a dominant minority. The result was the rise of the "mystery schools," where accepted students were initiated into the mysteries of that part of the Great Whole which they were morally and spiritually ready to assimilate.

We see, then, from this brief excursion into Greek history, that liberal education as such does not provide gilt-edged security against serious problems. But, on the other hand, it is clear from the foregoing that without that liberal education, we are almost certain to become enslaved by *Kubili,* with the dire results recorded by Phillips in his *Form and Color,* to which reference has been made above.

Liberal education must therefore be our point of departure, with the further requirement that the curriculum must be such as to lead to that type of education associated with the mystery schools. At all costs, students must be innoculated against becoming nothing more than mere intellectual robots with brains that grind general laws out of collections of facts. The Greek system of education that was based on poetry and on the doctrine of ethos in music offers a good example of the kind of foundation that must be that on which we build.

But the final goal we seek *must* be nothing short of the transcendent sphere of Fung Yu-Lan; for the moral sphere is apt to produce that type of citizen which in the end fails to deliver the goods, for the citizen has degenerated into the type associated with the sphere of egoistic profit. Or at best, the citizens produced by the moral sphere constitute in the aggregate a "nation" that can only be properly defined, in the words of the historian H. G. Wells, as "in effect any assembly, mixture, or confusion of people which is either afflicted by or wishes to be afflicted by a foreign office of its own, in order that it should behave collectively as if its needs, desires, and vanities were beyond comparison more important than the general welfare of humanity."[10]

Sooner or later we then find ourselves living in "a world of independent sovereign nations" which means, in the language of Wells, "a world of perpetual injuries, a world of states constantly preparing for or waging war," a fact more than fully attested to by the two world wars, and the "phony" and "cold" war periods of this century which have almost become our way of life.

Therefore, from the very first stages, the mind must center on the universe as the Great Whole of the transcendent sphere of Fung Yu-Lan, within which all the other wholes will be seen clearly as but partial wholes.

Liberal education for world citizenship must therefore be primarily concerned *at root* with securing the clearest and most intimate practical and detailed understanding possible of several basic elements. Among them would be the following: (1) what the universe really consists of, what makes it tick, and why; (2) what the earth really is, what makes her what she is, and why; (3) what the constitution of man really is, and why it is that and not something else; (4) what the interrelationship between the universe, man, and the world of nature really is, how it operates, with what results, and why; and——perhaps most important of all (5) what is the pattern behind all of these, how does it work, and why does it work in that manner and not in some other manner.

In this inquiry, the principle of scientific causality will certainly prove to be a broken reed; what we must use is the principle of synchronicity of Jung. The difference between these two systems of "proof" can be made clear by an illustration, borrowed from a Nigerian colleague of mine. Consider a man walking down the road; a house falls on him and kills him. The European says that the man died because the house fell on him, and he considers the question settled. Not so the African. He wants to know why it was that particular man, on that particular day, at that particular time, on that particular road, on whom that particular house had to fall, with fatal results. Until these "whys" are answered, all we know is how the man died, not why he died. It is in this sense of "why" that liberal education must think and act.

Then does the search for a liberal education for world citizenship become an adventure of the spirit, to the service of which will be brought both the intellect and the intuition, both the Western and Eastern lobes of the human brain, both that which we call science and that which we call religion, in each case symbolized by the two legs a man must have in order to walk, neither of which by itself can deliver the goods insofar as the process of walking is concerned. We shall need, therefore, both the Western point of view with its emphasis on form and function, and the Eastern point of view with its emphasis on feeling and color, no longer in opposition one to the other, but harnessed and under the jurisdiction of the soul, the knower of knowledge.

Thus are we free of the destructive influences of the divisive number *2*, for now we have a synthesizing factor in the spirit, which brings us under the influences of the number *3*——for now we have three factors in operation ——and, contrary to ***Kubili,*** the number *3* is the number of divinity, symbolizing the Trinity of Godhead in every religion.

John Stuart Mill has been quoted as saying: "Human nature is not a machine to be built after a model, and set to do exactly the work prescribed for it, but a tree, which requires to grow and develop itself on all sides, according to the tendency of the inward forces which make it a living thing." With the Western and Eastern lobes of the human brain harnessed and brought under the jurisdiction and control of the soul, we shall see that education must indeed concern itself first and last with those inward forces that make man the god-in-the-making that he is.

The time for this venture is more than ripe. For the better part of the past thousand years or so, those who see in astrology a divine science have been ridiculed by the "leaders of thought" in almost every field of academic study. The position has altered drastically, for in its issue of January 10, 1970, the *Saturday Review* included five short articles on "The Star-Fixed Ages of Man," where we find the pattern of human evolution, recorded in the stars, that has been expressed over long periods of time by responsible astrologers and by members of the mystery schools.

According to this record, mankind is moving out of the Age of Pisces into the Age of Aquarius. This idea has been treated in some detail by Vera W. Reid in her *Towards Aquarius.*[10] From this and other similar sources, it is clear that––as Vera Reid summed it up in her book––"the Aquarian Man of tomorrow will find the fears behind our racial prejudices, national hatreds and economic barriers as hard to understand as it is hard for us today to imagine the altruistic motives and more enlightened ideals which will guide the future world."[11] Also that we are moving forward into a world where national boundaries, national interests, nationalistic patriotism, and the like will be outdated and anachronistic indications (where they exist) of a retarded development. In short, we have to think in terms of world citizenship, if we are not to be found unprepared by a future that is fast becoming the present.

Moreover, as we move nearer the beginning of the Aquarian Age, we come more and more directly under the influence of the planet Uranus, "the Awakener whose function it is to rouse the human spirit from its age-long sleep and bring it to conscious awareness of its divine origin and destiny" (97). But Vera Reid also points out that while a positive response to Uranus endows the individual with originality, vision, and insight akin to genius, "the negative response on the other hand may cause him to become a crank who seeks to overthrow established traditions before he has a clear idea how to replace them with a constructive policy" (98). She adds, however, "usually, . . . Uranians show a marked ability to use old things and ideas in new ways. So they are able to reform existing conditions and old habits of thought without undue loss of time or waste of energy" (98).

We have here, I suspect, a possible explanation of the campus unrest that has plagued us for quite some time and shows hardly any signs of abating. For the action of Uranus is "sudden, unexpected, explosive, and revolutionary. It can and does effect lightning transformations in both individual and national life" (98). From this kind of viewpoint, it seems abundantly clear to me that one could not overstate the timeliness, the importance, the value, and the urgency of such a symposium as this. We cannot dream of controlling the Uranian response in any individual; but we must take steps to turn the negative responses to positive ones; to look beyond the clear indications of a tendency towards violence to the reasons underlying that tendency, realizing that perhaps the violent youth of today is himself confused by his propensity towards violence; he speaks with the voice of a "coming age" without realizing what he is doing, and his very youth makes him much more unconsciously responsive to, and conditioned by, the Uranian influence.

Clearly a lead must be given, which will aim, not at repressing or destroying, but at redirecting all negative responses to Uranus into positive, constructive, creative channels. This evolutionary progression into Aquarius was foretold in the Bible, for Aquarius is also known as Man. Thus all references to "the Son of Man" in the New Testament are properly understood as references to the Aquarian Age.

Liberal education for world citizenship is, therefore, much more than something to be debated upon and then filed away. It is only through giving this subject the most profound, sustained, and deep thought and reflection of which we are capable that we can hope to find that door which leads to greater spiritual unity and deeper consciousness of human fellowship among humankind. Contemporary events heavily underscore the fact that we have to find that door, and we have to find it quickly.

FOOTNOTES

[1] John S. Brubacher, *Modern Philosophies of Education* (New York: McGraw-Hill, 1962), p. 1. Further references to Brubacher will be cited by page number within my text.

[2] March Phillips, *Form and Color* (London: Duckworth, 1925), p. xiii. Further references to Phillips will be cited by page number within my text.

[3] Paul Louis-Couchoud, *Asiatic Mythology* (London: George G. Harrap, 1932), p. 28.

[4] Manly Palmer Hall, *Man: The Grand Symbol of the Mysteries* (Los Angeles: Manly Hall Publications, 1932), p. 11.

[5] Manly Palmer Hall, *First Principles of Philosophy* (Los Angeles: Philosophical Research Society, n.d.).

[6] Fung Yu-Lan, *The Spirit of Chinese Philosophy* (London: Routledge & Kegan Paul, 1962), p. xiii. Further references to Yu-Lan will be cited by page numbers within my text.

[7] Arthur Waley, *Three Ways of Thought in Ancient China* (New York: Doubleday, Anchor Books, n.d.), pp. 14–15.

[8] G. Lowes Dickinson, *The Greek View of Life* (London: Methuen, 1932), pp. 228–29.

[9] Lewis Mumford, *The City in History* (New York: Harcourt, Brace and World, 1961), pp. 167–68. Further references to Mumford will be cited by page number within my text.

[10] H. G. Wells, *Outline of History* (London: Cassell, 1966), p. 977.

[11] Vera W. Reid, *Towards Aquarius* (1946; reprint ed., London: Aquarian Press, 1969), p. 101. Further references to Reid will be cited by page number within my text.

Liberal Means Disciplined

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A little boy was asked whether he could play the violin. He said he did not know because he had never tried. If he had, he would have found out he could not. Not yet, at least.

We are all at liberty to try anything. Rarely do we succeed at first try. Things want to be studied. The mastery of things depends on intelligent inquiry and on diligent practice.

Mere trying is not enough. It may be a beginning, if we go at it with open eyes. Then the trial teaches us that, as yet, we are at the mercy of the thing we cannot yet master. Let the thing be a violin, or a bicycle, or anything. Every thing wants to be handled in a certain way. To discover that way is the first step toward mastery. Then come the many steps by which we align ourselves with the way of the thing, diligently.

We, too, are things of a kind. Each one of us must discover his own ways in order not to be mastered by them, but instead to master himself.

As long as we lack inquisitiveness and diligence, things master us. They are obstacles. We are not free. They impose on us. And, impatiently, we may give up. We may rationalize our quitting and say that we are not really interested. Yet such rationalization cannot do away with the fact that, as yet, the thing is my master, and I am in its servitude, even if I simply turn my back to it.

The quitter may *feel* free, for the moment. But if he keeps turning his back to every difficulty he encounters in things, where is his refuge? In never-never land? How can he retain that mere feeling of apparent freedom? Will it not be replaced, eventually, by the other feeling that he is a failure?

The task of education is to help the pupil find himself. In failure there is no worthwhile self. Nor is there in doing nothing.

Every sound child wants to do things by himself. And every sound mother will find a way of setting things so that there is a good chance for the child to handle them by himself.

The same is true of every sound school, from kindergarten to graduate school. This does not mean that teachers should take no initiative. Just as mothers will set up the home so that their children can find themselves, so teachers must set up the school the right way. Schools, like homes, do not run themselves. Nor are they run well if left to the fumbling of pupils. To be sure, at the university level students should no longer be fumblers, but able to pick fit advisers and plan a sensible program of study.

A school is in good shape if it helps pupils to become students, that is, if it induces them to size up the difficulties in any given subject matter, and thus lets them discover the challenge to their perseverance.

A school is in poor shape if it does nothing but train pupils in the tricks of some trade. The trade may be lucrative, and its rewards or its prestige may be a powerful motivation for the pupil. Even so, such training merely shapes the pupil as a cog in some piece of social machinery. Let the machinery change as, under modern conditions, it is likely to do, and the cog fits no more.

There is nothing wrong about vocational training as such. Society needs well-trained workers. Wrong is done to the trainee only if he is kept from the discovery that he is being trained in the way things have been and are. Nobody knows for sure what they will be. And in this lies the challenge for the trainee to keep himself ready for changes which may become necessary. If he is alerted and consequently ready and willing to change, then vocational training proves to be liberal education.

Liberal is the opposite of servile. I believe this contrast of meanings comes from the Spanish where *servilismo* means a servile spirit, unfree and submissive. The servile person conforms. He feels he can do nothing about the way things are. So he goes along even if the way of things is evil. If oppressed too much he may rebel and smash things. But rebellion is not revolution. It is merely the other side of the coin of servility. The rebel *seems* to have the zest of initiative, but he leaves to others the rebuilding of what he smashed. He is still in servitude to the circumstances.

The revolutionary has a plan, be it sensible or fantastic. But, as the circumstances develop, he may find himself in servitude to that plan, and he may merely have changed masters.

True revolution is conservative. It is possible only if we succeed in putting something behind us, having mastered it and thus having retained it, though changed. Whatever we master becomes our past, yet it is not a dead and useless past, it is now our material and a tool wherewith to build a real future.

Mere training fits us for things past and perhaps still persistent for the moment. It makes us servile. It thrives on conformity.

The very word education has another ring. *Ducere* means to lead, and *educare,* to lead out from––out from servility, even the servility of our own hunches and urges. True education is always conservative, for it is the rebirth in us of whatever was alive in the past. It is also always revolutionary, for it leads forth from servility and beyond mere rebellion into the making of a new world.

To be sure, there are times when this nature of education is manifest only in the maturing of individuals, and maybe of lonely individuals, while social forms remain much the same. But it is precisely the mature individuals who alone can and will bring about wholesome changes of the social forms, that is, a true revolution. Those so-called revolutions which are engineered by immature individuals soon reveal that they are stale and insignificant modifications of the old forms.

Maturity is mastery, and there is no mastery which does not spring from discipline, from diligent dedication.

As the times change so do the disciplines whose mastery is indispensable for a given era. The easiest illustrations are schoolish. The first requirement for any medieval schooling was the mastery of Latin. Since the fourteenth century it has become more and more obvious that physical science requires a more and more voluminous mastery of mathematics. The last two hundred years have made it plain that we must become masters in that sober yet very personal attitude of the historian. Its nature is at once of public concern, for without it there can be no sober statesmanship, nor can we attain maturity in religion and theology. It seems obvious that widespread immaturity in these matters blocks the way to a sounder future.

What could a new liberal education be? Certainly not a radical break with the past, such as the Bolshevists fancied in 1917. Even when in a mere individual such a break seems necessary, as in the case of an alcoholic or a drug addict, it does not wipe out the past. The past is always with us, either mastering us or being mastered by us. And we cannot master it without study and personal decisions.

Liberal education is always the same and it is always new. Man is always confronted by the liberating challenge to resist any training for servility. Yet, as the times change, so do the seductive faces of servility, and the ever same challenge requires of man ever new efforts to overcome the seducer and, thus, to find new ways of freedom.

The portrait drawn of the arch-seducer is revealing. For a long time the devil was depicted as sly and clever and enterprising. Nietzsche, however, finally pointed out the truth when he saw the devil as a lame dwarf perching on man's shoulder and letting words of lead drip into the human ear. If God is the everlasting challenge, the devil is the spirit of hopelessness and of comfortable conformity.

On Being Part of the Whole: Remarks on Papers by Fela Sowande and Fritz Marti

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One thing I would like to say about Professor Marti's paper is that I think he is much too optimistic about mankind. Particularly, I believe that he underestimates the devil. I have met the enemy long ago and he was me. I found Chief Sowande's paper very intriguing and quite profound. I think that his history is essentially correct. If you trace the very history of the words for the mind, you find that the root is the Sanskrit *metra. Metra* means to measure, to cut, to divide, to slice. We still employ this usage in words such as *metre, meter, metronome,* etc. One meaning of the word *mind,* then, is to measure, to cut off from, to divide. And this is the way that intellect has been taken for the most part in the West. Intellect and its use has become a method of dividing and conquering the world, a way of relating in which man views himself as an alien pitted against the world. Thus the Westerner says: knowledge is power and by "power" he means control. You can find this interpretation of mind going back into our distant history and being reinforced a great deal, I must confess, by Western theology. In Western theology, man is conceived as being profoundly unnatural. He is conceived as being something apart from nature. He is conceived as a being who therefore has the obligation and duty to subdue nature and to hold it under his dominion. And what this leads us to then, as Chief Sowande has rightly pointed out, is the concept of control.

Now if man attacks the universe, then his method of relating himself to it is the method of subjugation and control. What this means is that man then views himself as basically an enemy of the universe. It means that he is arrogating to himself a power which is beyond human capabilities. Another thing this stance means is that man becomes basically schizophrenic because he is denying that he himself is a part of nature. It also means that he is profoundly and deeply disturbed by his own unconscious, because the person who wants absolute control over his environment displays an absolute distrust in himself. Let me give you an example. At least last year, the best pitcher the Cardinals had was Bob Gibson. Yet even he lost games. Suppose Bob Gibson had said to himself: "I cannot throw this ball until I am absolutely certain it is going to go over home plate." The more he thought about how he had to have absolute control over the ball, the harder he would grip it, and the more impossible it would be for him to let go. As Lao Tze said, it is impossible to throw a ball while you're holding on to it.

I fear this is the case with many of us in the West. It is true of parents, it is true of other people who conceive of themselves as authorities or who are authorities because of their status in society. This fear of possible loss of control is the basis of the force behind the word *must.* One feels he must do this or must do that. And his actions thus become reactions. They become compulsive. And those who actually are or think themselves authorities thus themselves become compulsive. They are terribly afraid of making mistakes. They are terribly afraid of the possibility of other people making fools of themselves or of making errors. But an error is also a part of the universe and to try to attain absolute control over the self and the environment is itself an error. To try to attain absolute control is to say that you mistrust yourself with being able to cope with change.

If you think about it long enough, you really have no alternative. If I say to you, you have nothing else to do except to trust yourself and to move with the universe, and you say, "But I can't do that," my response is, then, "But how do you trust your mistrust?" It is not possible for you not to trust yourself at some level. So why does man not trust himself at a healthy level, a level which is not merely based on his own schizoid egocentricity but upon a relationship to reality? The problem, you see, is merely the shifting of a consonant. The problem is to go from being egocentric to becoming geocentric.

I thought Chief Sowande's citing of the story from Darwin was very good. It reminded me of another scientist who charms me not because he was a scientist but because when you would ask him what his favorite occupations were he would answer: sailboating and poetry. This was Robert Oppenheimer. And his answer showed me that this man was still a man. He had not become as one-sided, as split off from the world and its values as Darwin did later in his life. One might also remember Albert Einstein. Here was one of the world's great geniuses and great physicists. Yet he was inordinately fond of black jellybeans. A man who retains his love of black jellybeans can't be all bad.

This may sound absurd. But I don't believe it is. There is a relationship between being shipwrecked in relation to the values of life, as Darwin was, and retaining a love of sailboating, poetry, and black jellybeans. The man who retains his love for the nuances of things is relating himself to them positively. He is allowing things to be what and as they are. He is, in short, allowing Being to be. And in so doing, he is allowing the value of things to manifest themselves. Such a man has a sense of the sacred. He has become, or persisted, as a caretaker of being, that is, one who takes care about being, who is concerned about the good of the whole. You do not need to be a theologian or a priest to have a sense of the sacred. Sailboats are sacred, motorboats profane. Poetry is sacred, prose is profane. Trains (complete with their long lonely wails) are sacred and automobiles are profane. And these acknowledgments are important, not trivial. For there is a relationship between the words "holiness" and "wholeness." And I think this is what each individual is always seeking, his wholeness. And to have wholeness is to have integrity which means thereby to recognize the integrity and the worth of others. It is also to recognize the sacred in others, even in other things such as sailboats, poetry, and jellybeans.

So essentially, I think that Chief Sowande is not talking about epistemology, although he is talking about theory of knowledge. He is talking about widening our vision. He's talking about going from narrow, focal vision to peripheral vision. He's talking about learning to trust the horizons of consciousness and learning to trust the unconscious––to accept it instead of denying it. This is something we have not traditionally done in the West and it is one of the things which makes us so schizoid. But on an even deeper level, Chief Sowande is talking about metaphysics. He is indicating that there is a real, not an imagined difference only, between quantity and quality. He is asserting that the real qualities of things will reveal themselves to man if he is but patient and allows Being to be.

I think I may be able to give two short examples of this from two types of poetry. One is from the West, one is from the East. The Eastern example is from Bashō, the great Japanese poet of the seventeenth century. Bashō wrote a short poem in which he said:

> When I look carefully
> I see the *nazuna* blooming
> By the hedge!
>
> Yoku mireba
> Nazuna hana saku
> Kakine kana.

And that's the end of his poem. It is a very short poem and he ends it with the word "kana" which we can only make into an exclamation point. I suppose that it's closest meaning in English would be "Wow!" The other example is from Tennyson. Tennyson was a Western poet who greatly admired science. But he was also a poet. Which means that he was incredibly schizophrenic. You thus find him writing lines like "The stars blindly run, she whispered" and "But not without a plan" in the very *same* poem! Tennyson believed in both mechanistic materialism and in the divine purposes of Deity. Here is his poem about a flower:

Flower in the crannied wall,
I pluck you out of the crannies;--
Hold you here, root and all, in my hand,
Little flower--but if I could understand
What you are, root and all, and all in all,
I should know what God and man is.

Now, my point is, the approach of these two men to a flower is entirely different. Tennyson's approach is intellectual, it is objective, it is distant, it is discursive, it is critical, it is psychological, and it is antagonistic. Tennyson is concerned only with his own curiosity and his own understanding. He feels that until he *understands* the flower it will exhibit no meaning. What does Tennyson do? The first thing he does is pull the damned flower out of the wall! He doesn't care about the flower. He doesn't care about *its* destiny. He doesn't care about the ground in which the flower is growing, which is the very basis of its being. He doesn't even acknowledge what a triumph it must be for a little flower to have grown out of *concrete.* Tennyson doesn't give a damn about the flower. What he does care about is Tennyson's understanding of the flower. He is using his mind to cut. He has convinced himself that unless he understands the flower he cannot do anything with it or relate himself to it. And to understand, for Tennyson, means to tear it apart, to dissect it, to kill it. And when he's done, he hopes that he will understand not only the flower, but God, man, and the whole universe. And it must be admitted that after this process he may have a better understanding. But he'll also have a negative relationship and a dead flower. A precise knowledge of nutrition is of no help to a dead man.

Tennyson does not feel one with the flower. He views himself as alien and as the master who can do with the world what he wills. Hence his poem is filled with action, will, and conceptualization. Tennyson's poem is intellectual, distant, discursive, dominating, highly eloquent, cool, puzzling, and shallow. It has many words, but it is weak on feeling. We do not sense an emotion passing into thought here except the emotion of intellectual puzzlement. There is a sense of wonder, but the wonder is at a conundrum, not at or with the flower. Tennyson resists the flower and he differentiates himself from God and man. And, of course, he is apart from nature. Hence Tennyson is "scientifically objective." His poem is all intellect and the poet is schizoid and alienated.

Bashō, on the other hand, is strolling along, he sees an insignificant flower blooming by a hedge and says "Wow!" His poem is specific. We know it is a *nazuna*, a so-called "worthless" flower. We don't know what kind of flower Tennyson has plucked except that he indicates patronizingly that it is "little." Bashō's poem is short, his feeling is deep. His poem is eloquent but not wordy. Its eloquence comes from its terseness, its depth, and its silence. What does Bashō do? He merely looks carefully. He leaves the flower alone. He allows the flower to be. He doesn't pull it up, he doesn't demand that it satisfy his curiosity, he doesn't subject it to intellectual analysis or "high-minded" speculation. Bashō is not antagonistic toward the flower. He is *with* it. He is committed to being and hence to its being. He leaves the flower in the ground——its ground under the hedge——where it belongs. And he allows the flower to manifest itself, to appear through his eyes and his feelings. His poem is saying: here is how it feels to be a nazuna blooming beneath a hedge: Wow! Bashō does not demand, he does not compel, he accepts. And in accepting, he displays patience for being. It is this patient acknowledgment, this love and care, which provides the ground for the situation to reveal itself. Hence we feel what it means to be——as distinguished from understanding what it means to be——a man by a hedge looking at a flower in the shade. Bashō is not stupid. He "looks carefully"——an ambiguous and profound act for it can mean "looking with precision" and also "looking with a sense of concern." He does not describe, he presents. And what he presents is not merely a flower by a hedge, but the emergence of deep feeling into consciousness while retaining its unconscious overtones.

Two quite different approaches. And what I believe Chief Sowande was arguing for is the second position, not in the sense that we must throw away all our air conditioners, or that we have to destroy all of our buildings or all of our great machinery and so forth. But in the sense that we have to give these human products and activities human meaning. The goods we have produced are goods, otherwise we would not call them so. But they are not goods merely in themselves. We must put them into a wider context. What Chief Sowande means by a liberal education is not merely freeing *from* (whatever necessities there are) but freeing *into*——freeing into a universe of human meaning and value. And at the epistemological level what this means is that to know is not only to have intellectual understanding. It is to have intuitive understanding. Because intellect itself includes intuition. Intellect has a creative part, a part in which and by means of which it can create visions of relationships which are not purely subjective but are acknowledgments of intrinsic value. Creative intuitive vision can provide us with ideals. It can also provide us with simple acknowledgments of the sacred in things——the way things are.

When I say "the weeping willow weeps" (please pardon the alliteration), I am not myself weeping, I am not sad, I am not crying. In fact, I am not disturbed at all. Nor am I being anthropomorphic. I am simply acknowledging the objective qualities and characteristics of the willow. I am transmitting what the willow *expresses,* namely, that it is the type of tree which exhibits lassitude, which exhibits dragginess, which exhibits delicacy in the leaves, which exhibits slender boughs that move lazily in a slow breeze, and so forth. The "weepingness" is the willow's appearance. It is its shape, its structure, its function. This is the way that the willow relates itself to its ground and its universe. Such an assertion is neither esoteric nor Pickwickian. It is accurate.

But it is not accurate in a wordy, objective, scientific, or discursive way. It is a simple report of perception and intuition. It is the way the willow is.

I think that Chief Sowande would say that the same kind of attitude is demanded of man. And it is demanded that we utilize this attitude not only toward nature but also toward the human world. If we only rise to the socially reflective level, we still think in terms of we and they, and if so, we have underdefined ourselves. We are still partial, incomplete, and unwhole, not to mention unholy. The only way I can be a "me" at this level is when you are a "you." Without you, I can't even define myself. And the things that irritate me in you, the things that infuriate me in you, are the things which I am normally suppressing in myself. Why do such traits so infuriate me? Because you objectivize my shadowed pride. You stand as a reflection of my suppressed unconscious. Were this not so, I would merely be indifferent to you. On the other hand, were I to accept you as a thou, I would also be able to accept my own unconscious. And were I able to do this, I would be a whole person. Were I able to accept my own unconscious, to move with it, to dance with it, to become a whole person and to uncover, to dis-cover, my place in the world as a whole, there would be no conflict between I and thou and we would be brothers. My partiality limits me but it also limits you. The amazing disclosure that we are both human *because of our differences* is something we constantly forget.

This is why I think that Chief Sowande is quite correct when he says that if liberal education is defined merely in terms of the moral (social) sphere, we have not reached the proper level because the proper level is the level of the Tao. It is the level of the Way, the level of the pattern, the level that the Chinese also call *Li* in its metaphysical, not its social sense. It is the level of a pattern which is nonhuman but not inhuman. It is nature naturing. It is the unfolding of the self into the whole. What Chief Sowande is saying here is so subtly profound that it happens to be true. That is why no one believes it. He is saying that the whole life, the good life, the liberal life is a living mirror of the Tao, not a deducing of what an individual should or must do next. If I think about walking, if I try to work out the physics of which foot should go first, I could never move a foot. How do I walk? By walking! How do I eat? By eating! How do I sleep? By sleeping! That is, things which grow develop from the inside out and not from the outside in. A world of made is not a world of grow. A concrete example of this might help.

I am not a bowler. If the truth must be known (and it must) I'm a lousy bowler. But I became involved for awhile in a faculty bowling league. One exceptional night, I walked to the line and threw three strikes in a row. This was incredible. It was fantastic. And I said to myself, "Linden, think of it: *three* strikes in a row! If you throw the next one as a strike, you will be unbelievable! No one will beat you, etc.... " And so I thought to myself: how did I throw those three strikes in the first place? And the more I thought, the more I analyzed. The more I analyzed, the more self-conscious I became. The more self-conscious I became, the more I began correcting my feet and flexing my muscles in anticipation of that mythical fourth strike. And the more I did all these things, the more tense I got until I finally walked gingerly up to the line and threw the ball down the gutter. I had ceased to trust myself. I had ceased to move with myself. I had lost my peripheral and intuitive vision. It was impossible for me to *think* myself into throwing a strike. And I believe this is true in most sports. Thought and training and technique can bring you up to a certain point. But the ultimate grace of movement operates at an almost unconscious, and certainly an unselfconscious and intuitive level. You have to trust your body to be itself. And when you do, it is.

This is one reason that I thought some of Professor Marti's examples were a bit off the point, particularly his example of riding a bicycle. No one can teach anyone how to ride a bicycle. As a matter of fact, from the viewpoint of physics or engineering, riding a bicycle is completely backward and wrong. When the bicycle begins to tip, you turn the wheel the wrong way (from the viewpoint of physics and engineering) and yet you stay up. Riding a bicycle is a matter of intuitive incorporation of the situation. It is not a matter of conceptual understanding. It's moving *with* the situation, not apart from or against it. The only way you really learn to ride a bicycle is by riding it. Your father puts you on, gives you a push, and lets go. You then wobble on your own. After a few skinned knees you "learn" the way of a bicycle. The same thing may be said of bees. Any physicist can tell you that the bee has too large a body for its wings and that it can't fly. Bees, however, do not take physics so they go right on doing the impossible: flying.

Mathematical probabilities and material preconceptions do not stop bees from flying or children from riding bicycles. And Chief Sowande is talking about this too. He is attempting to take into account a higher type of pragmatism, really, one which is beyond the principle of advantage, if one can call that a principle. He is asserting that the liberal arts must take into account not merely the interest of the individual, nor the interest of society, but the interest of the whole. One might call this the intentionality of nature. What does this mean in relationship to the whole? What does this mean about man's relationship to that?

Perhaps Professor Marti is talking about the same type of thing when he says it is not enough to have sheer technique. The mere transmitting of information or the incorporation of a one-two-three order of doing this or that is of no human or earthly use whatever. It can produce fantastic material gadgets, but it also produces an odd kind of man. That is, such a process can produce people who are tremendously talented and extremely limited. They forget the intrinsic value of black jellybeans. They become, in other words, learned ignoramuses. One unfortunately meets many such people not merely in the sciences but also in the humanities, and, especially, in literature. There are men who can tell you more than you want or need to know. There are men who know everything about every cross footnote to any work by T. S. Eliot that was ever written or existed even verbally. And yet these same men, shamefully, are men who have never felt what a poem was like, nor do they know intuitively why the poem has meaning or relevance to anyone. To be such a man is to be incomplete, to be lopsided. And this is worse than being merely ignorant. Merely ignorant people at least have the humility of their ignorance. But the learned ignoramus has the arrogance of his Ph.D. So perhaps another thing that a liberal education should provide is this: a certain humility in the face of things.

I think, then, this is what Professor Marti was talking about when he asserted that one really has not mastered a subject until he has taken it the hard way, until he has taken it into his heart and it has become his own. This is why I particularly object to one word he used when he said we human beings too are things of a kind. I am a human being with all of my frailties, with all my limitations, with all my meanness, with all my aspirations, with all my foolish idealism, and all my peculiar unconscious levels. But I perceive a distinct difference between myself and things. I can say this because I am not a thing. I do say this because I am not a thing. To a chemist I may be a thing for certain limited purposes, but even the chemist should remember that I am first and foremost a human being.

I do think there is an implied ambiguity which I doubt that Professor Marti intended in his paper. He is arguing, of course, that we should all become not professional this's or that's but professional humans––which is a most difficult subject. Socrates was quoted by Chief Sowande as saying that living is an art and becoming a professional artist is not an easy task. And certainly Professor Marti is quite right on that. One can see this in popular entertainers. Frank Sinatra is a professional. The lady some of us were privileged to hear the other night, Nina Simone, is a professional. That means that neither will settle for anything less than the best in themselves nor in their performances. And I think this is true or ought to be true in every area of life.

On the other hand, Professor Marti talks about the necessity for diligent dedication. He then describes liberal education as being the opposite of servility––servility being defined as the master-slave relationship––and he argues that we must be mastered by ideals. But this sounds almost as if he is urging us to be free slaves. As I say, this is an ambiguity that sounds like a contradiction. But I don't think he meant it that way. All of us could agree, I believe, that men should be committed and that one function of the liberal arts is to engender and reinforce commitment. The question remains: committed *to what.* Chief Sowande and I agree that it means commitment to the Tao, to the whole. Commitment in this sense would be learning to move easily in your traces and being freed into a vision of the whole.

The Contributions of Biology to a Liberal Education

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A liberal education may be characterized by its formal content as an education in the liberal arts and sciences. The objective of such an education would be to enable man to understand himself and the world around him. Accordingly, a liberal education may be defined as an education that attempts extensive intellectual, moral, esthetical, cultural, and social formation, and which presupposes a devotion to democratic ideals in the institution that carries it out. A liberal education is an ambitious goal which needs to be made a guiding principle of the total period of schooling if substantial progress is to be made during the college and university years.

Biology is the science of life in all its manifestations. Traditionally, biology has been conceptualized as consisting of the areas of botany, zoology, and microbiology. Recently, division into molecular and cellular, organismal, populational, and psychobiology has been preferred. Yet, the diversity and complexity of biology make it difficult to conceptualize it in any adequate manner. As one of the natural sciences, biology is both descriptive and experimental, qualitative and quantitative in its approach. Its most important applications are in medicine and agriculture.

HISTORICAL ROLE OF THE NATURAL SCIENCES IN UNIVERSITY EDUCATION

I should like to examine first the historical roots of liberal education in this country. Let us begin with the teaching tradition of the American colonial university, which was described in the University of Chicago catalog when Robert Maynard Hutchins was president there as follows: "Collegiate education is primarily the examination of texts and the exercise of reason."[1] In early American colleges, it was the teacher's task to make assignments and listen to recitations given by the students. In the senior year, the president of the college often gave a series of lectures on moral philosophy or ethics, but for the most part, college teaching centered around assignments and recitation.

The dramatic development of the natural sciences provided the force that led to the development of the modern university with its emphasis on experimental inquiry. Around 1800, the devotion to experimental science had led, in Germany, to a redefinition of the university by W. von Humboldt. The university was now defined as an institution responsible for teaching and research. The reform of scientific instruction also led to the emergence of the teaching laboratory. According to tradition, the first one to be established was the physiological institute of Ian Purkinje at the University of Breslau in 1824. It was located in Purkinje's home. The major proponent of the teaching laboratory was Justus von Liebig, whose chemical laboratory at Giessen (founded in 1825) became much better known and spawned further developments.[2]

While this development was going on in Germany, the old liberal arts college in the United States no longer satisfied the demands of the young nation. Americans began to go to Germany, first in a trickle, eventually in a stream. Many presidents of prominent universities studied in central Europe.

During the nineteenth century, the influence of the modern German on the American university was considerable, but the American university did not copy precisely the German system. Instead, it became a melting pot of the modern German with ideas of the medieval university, the English college, and the French view of centralized control of education. All these ideas became amalgamated with new ideas that derived from the need to provide for a multiplicity of functions, including general education, specialized education, scholarship, research, public service (including extension and consultation), and conservation of knowledge.[3]

The difference between the American and the German university is best illustrated by two important dates. In 1863, the University of Tübingen, as the first university in Germany, formally recognized the status the basic natural sciences had achieved by then by establishing a separate school for natural sciences (Naturwissenschaftliche Fakultät). At that time, the German Technische Hochschule began to vie for equal status with the university. (The Technische Hochschule had been modeled on the French École Polytechnique and emphasized the applied aspects of science.) In the United States, the Land-Grant College Act of 1862 had provided for institutions in which agriculture, mechanical arts, and classical studies could be taught side by side. In this way, the American system avoided the rift between the basic and the applied sciences and accomplished its first great transformation.[4]

In the United States, the developing applied biology contributed significantly to an economic development which led to mechanization and industrialization and the present suburbanite society. It is, perhaps, ironic that applied biology brought forth new and exciting careers while it diminished opportunities for the average child to learn about nature by personal observation and experience outside the classroom. In fact, this is the point at which I have been experiencing the greatest generation gap.

After World War II, the American university entered into a second period of transformation, as was pointed out by Kerr. This transformation resulted from the following causes: the university was no longer restricted to a small elite group but was educating increasing numbers of students; government, industry, and other segments of our society had expanded their claims on the university; and the university had to adapt to and channel new intellectual and social currents.

Again, the natural sciences, within the university itself, provided a major impetus for this transformation. One reason was that federal support for research became a major factor in university budgets. For instance, in 1960, higher education received about 1.5 billion dollars from the federal government. Two-thirds of this amount supported 75 percent of the university expenditures for research but constituted only 10 percent of the total federal expenditures for research and development. Another reason, noted by C. P. Snow, is that American universities accumulated and concentrated a large amount of the total scientific talent of the Western world, probably around 80 percent. Finally, biology is currently considered to be one of the fastest growing intellectual fields, and it already exerts an impact on our daily lives during the second half of this century comparable to that of the physical sciences during the first half.

Thus, a historical review of the role of biology as an academic discipline indicates that its contributions must be sought on a variety of levels.

CONTRIBUTION I: RECAPTURES NATURE EXPERIENCE

Through man's whole period of existence, the experience of his physical and biological environment has been a basic and primary learning experience. On nature, he sharpened his faculty for observation and inquiry. Even during the last century, the day-to-day contact with nature, the responsibility for plants and animals, and the immediacy of the economic consequences if they were not properly cared for, were an important part of the learning experience outside the classroom that led to a feeling of respect and responsibility for the environment in general and for any living organism in particular. It was shown above that this experience has been greatly diminished.

I believe that we should not dismiss an important environmental experience from our curricula without having demonstrated first that its intellectual, emotional, and moral benefits are either unnecessary or may be obtained in other ways. For this reason, I should like to list a recapturing of this experience in a modern form as the first contribution biology can make to a liberal education.

CONTRIBUTION II: ELUCIDATES BASIS OF MAN'S CONTROL OVER HIS ENVIRONMENT AND HIMSELF

Secondly, biology provides a basis for an appropriate understanding of numerous current and future problems and issues, many of which are derived from an originally biological situation but have considerable economic, political, and personal impact. Thus, biology must be a part of any citizenship education. Biology and its applications constitute by themselves an economic and political force. According to the National Registry for Scientific and Technical Personnel (1968 registration), our science manpower amounts to about three hundred thousand men and women in specializations ranging from anthropology to statistics. Biologists make up about one-sixth of this force and are second in numbers only to the chemists. On the national average, 43 percent of all reported scientists received support from federal government funds. This actually amounts to billions of dollars that government puts into the sciences through the NIH, FDA, NSF, NASA, the Department of Agriculture, the scientific agencies of the branches of the armed services, and the Department of the Interior. Weaver has pointed out that the involvement of governments in science is one of the major social, economic, and intellectual phenomena of our time.[5] As citizens, we must ask the questions: Is this money well spent? Is it distributed appropriately? Should it be increased in some cases and decreased in others? Farm support, food surplus, biological weapons, pollution legislation, medicare, foreign aid connected with birth control, cancer and heart research may serve as specific examples.

Alexander Pope's words, "The proper study of mankind is man," are often quoted, but the implication that they may also include a concern with our bodies and their well-being is not so often drawn. Examples for health issues with considerable sociological, economic, legal, and political repercussions are fluoridation of drinking water, drug addiction, smoking, alcoholism, and occupational diseases. The reports of the armed forces on the health status of our young men and the reasons behind the presidential fitness program show, for instance, that much information needs to be disseminated about the structure and function of our bodies and the factors that maintain and enhance their health.

Food, clothing, water, and shelter are basic requirements which we satisfy from our environment. Most of our food originates from plants, animals, and microorganisms, but unlike our ancestors, we are hardly aware of the conditions necessary to collect, catch, grow, or raise the raw product. How many of us know that a little over 2 percent of our population could supply all of our food and fiber?[6] Neither do we appreciate the problems connected with the refinement and storage of food. Food is produced in our country in surplus, and vitamin commercials abound on TV. Yet, lack of money and an inappropriate knowledge of nutrition still result in appreciable numbers of hungry or undernourished people in our country. Large areas of this globe cannot even produce enough food for their own peoples.

Few of us appreciate properly our dependence on another important and reusable natural resource, water. Irrigation has opened large areas in our country for food production, and it has also changed arid into humid climates. An even larger amount of water is needed by industry. The water that comes out of our kitchen taps has probably gone through a great many cycles of use and reconstitution. We may enjoy lakes and forests for recreational purposes, but we are scarcely aware of their role in water management.

Water and air pollution are a result of the burdens growing populations place on their environment. Overpopulation threatens to affect every phase of our lives since it results in increased demand on virtually every commodity and service, such as food, water, housing, schooling, cultural and recreational facilities, transportation, medical care, and waste disposal. Since the earliest days of his existence, man has had, from time to time, to cope with the problem of making his environment support a greater number of people. Many agricultural and technical advances may have been spurred by this necessity. Today, all land areas are politically distributed, and the development of the still existing underpopulated areas has become very expensive.[7] Man has already changed or manipulated many areas on this earth, and the so-called "natural" areas are far from their original state. The regulation of streams, drainage of swamps, and irrigation of deserts are drastic changes in the surface of the earth. Fields and, to a lesser extent, forests are carefully manipulated environs aimed at the cultivation and periodic removal of one or a few useful species. Even the equilibrium of species in wildlife refuge areas may be carefully supervised and occasionally adjusted. Many plant and animal species have been bred to satisfy man's economic requirements. No other species on earth has developed as high a faculty to manipulate its environment.

Man is also about to defy nature with regard to his own body. Spectacular medical advances have eliminated major infectious diseases and led to the cure or control of a host of pathological conditions. Used-up and damaged body parts can be replaced by artificial ones or by transplants. Man is even about to assume essential controls over his reproductive potential. New insights into the mechanisms of human fertility permit large numbers of people to have, space, and limit their progeny as desired. Genetic counseling is a first step toward the quality control of progeny. Further, spectacular developments may well be expected in the future. Already, certain steps of virus formation have been accomplished in the test tube. A chemical that transfers learning in a lower animal has been isolated. These and many other advances have muddled our past straightforward definitions of life and death and necessitated their restatement in biological, legal, and moral terms.

Thus, the impact of biology upon modern man has been to enable him to alter and control substantially other living species, his environment, and himself. Undoubtedly, his ability to do so will increase and be even more crucial in the near future. It may well become the major factor that will determine his survival on this planet.

In summary, I should like to quote Lord Todd:

> "... Science and technology now permeate almost every aspect of public and private life and they have had profound effect on our social systems, which have been slowly evolving over many centuries. The trouble is that although science and technology advance very rapidly, social attitudes and social patterns are slow to change; and it is the disparity between the rate of change in science and that in social behavior in its broadest sense that lies at the root of most of the stresses and strains in the world today."[8]

Thus, though science is universally encountered, it is not universally understood. Weaver attributed this situation to the following factors:

1. The average school training in the United States does not prepare the student for the science met in adult life effectively.
2. Many ideas and terms used in science are unfamiliar and difficult. Simplification frequently leads to misinterpretation.
3. The public at large is often only interested in the exotic, the spectacular, or the trivial rather than being "willing to do a little hard thinking."[9]

Among the sciences, biology particularly has become involved in many of today's problems, and individuals cannot react to them intelligently unless they understand modern science. If we truly believe in the rightness of the democratic procedure, we cannot delegate the weighing of the evidence and our final vote on it to the specialist.

I should like to distinguish here the transmission of an appropriate background in biology, which may also be described as scientific literacy in biology, from the teaching of so-called "relevant" biology. Most relevant to the nonscience student are technological problems—space travel, bomb testing, fluoridation, air and water pollution, heart transplants, etc. This type of relevancy is considered inappropriate, if not dangerous, by many scientists. For example, Shamos warns:

> The danger in designing courses primarily responsive to the demand for relevancy is that the content may be so peripheral to the intellectual goals of science as to mislead students on the true nature of this branch of learning.[10]

These dangers are, specifically, transference of learning and pseudoscience. Of course, this does not mean that relevant topics should not have their place in the biology curriculum. Science strives to discover both facts and generalizations, but the latter are more significant than the former. Accordingly, Koffler defines significant science as the breadth of a generalization a scientist has generated or the development to which he has contributed, and he includes specifically the development of important tools and techniques and, as a social parameter, the applicability of biology to the solution of pressing practical problems.[11]

CONTRIBUTION III: EXTENDS MAN'S INTELLECTUAL CONCEPTION OF THE WORLD

In the preceding, I endeavored to show that scientific literacy in biology is a part of informed and responsible citizenship. The preceding paragraph indicated that biology, in addition to its very practical aspects, has made a general and most formidable contribution to our intellectual concept of the world. This aspect, the third contribution biology can make to a liberal education, will now be discussed in more detail.

University education is scientific education. Karl Jaspers defined its elements as:

1. The content of the sciences, which encompasses the humanism of the humanities and social sciences, and the realism of the natural sciences. These subunits are conflicting.
2. The scientific attitude, which is objectivity.[12]

Many scientists agree that the essential content of the natural sciences is an intellectual conception of the world, and that this conception has creative and aesthetic qualities. This feeling has been most eloquently expressed by Weaver:

> The true significance of science rests not on its practical achievements, be they trivial or great, but rather on the fact that the scientific mind, approaching the wildly tangled confusion of nature, accomplishes an act of artistic creation when it discerns, displays, and illuminates, amid all the apparent complexity, hitherto-unsuspected relationships of simplicity.[13]

Not to have a reasonable knowledge of science is

> to be dulled to the beauty and to the spiritual significance of science, unaware of the incredibly lovely way in which our universe is put together, unconscious of the inspiring unity which binds together all life and all that is at the moment not alive, uninspired by the vision of man's new capacities to control his environment and to liberate himself for new and noble destinies.[14]

Accordingly, science education for the nonscience student is frequently viewed as emphasizing the intellectual rather than the utilitarian aspects of science. If students are to know the world in which they live, they must know the aesthetic as well as the real world.[15]

Furthermore, many scientists are convinced that contact with the sciences fosters the development of attitudes summarized in the term "objectivity." For instance, a 1966 report of the Educational Policies Commission of the NEA described values underlying science as follows:

> 1. Longing to know and to understand.
> 2. Questioning of all things.
> 3. Search for data and their meaning.
> 4. Demand for verification.
> 5. Respect for logic.
> 6. Consideration of premises.
> 7. Consideration of consequences.[16]

These values are affective goals for which there are no simple means of testing. Furthermore, scientific literacy (the premise for Jasper's points 1 and 2) is a long range objective, and its being achieved by a given type of curriculum is also difficult to demonstrate.[17]

I indicated above that the realism of the sciences and the humanism of the humanities are conflicting elements. This difference has been most drastically expressed as the antithesis of the two cultures. Though many scientists reject so drastic a position, they may complain about a certain asymmetry:

> Whereas scientists by and large respect the cultural mission of the humanities, the humanistic values and social virtues of science, in contrast to its utilitarian aspects, are rarely appreciated in the other camp.[18]

One reason may be the difficulty of explaining to nonscientists the scientist's "objective view of reality," which is a combination of scientific attitude and realism that was developed by the sciences and has proved tremendously fruitful.

Though most science begins on the premise of a critical realism, this basis is soon further refined. Weaver, e.g., defines the limits of our ability to perceive reality as follows: (1) so-called facts are obtained only through observation; (2) ultimate precision and ultimate objectivity are destroyed at one stroke because the observer himself is an essential part of the fact system; and (3) the selection of the group of "facts" to be dealt with is based on "... elements of choice, presuppositions which have neither a factual nor a logical-analytical basis but do have both a personal and a cultural basis."[19]

The astonishing consequence of this position is that facts are "true," but that truth itself is defined by the limit of man's ability to discern and explain, and that this limit is in turn subject to scientific investigation. Thus, not truth but the search for it becomes the focal point of the sciences, with the scientific method providing both the tool and the only stable component.

A view as impersonal as the one above was difficult for man to achieve. It has been developed best in the natural sciences, probably because of the special nature of their subject matter. Accordingly, the natural sciences, among them biology, offer the student a unique intellectual experience within the academic curriculum.

Art, economics, education, languages, philosophy, social sciences, and other disciplines are concerned with man and his idea of himself: his mind, intellect, and actions. To a great extent, these sciences deal with the subjectivity of man, and consequently, man is the focus of the investigations. In contrast, the natural sciences are largely concerned with the world that is apart from man and regarded as an object. Physics and chemistry deal with inanimate matter whereas biology deals with living matter or organisms. Since man is a living organism, he becomes the object of biological inquiry, but as one species among a few million.

This detached view of himself was not an easy one for Western man to acquire. Up into the High Middle Ages, the human body was considered sacred, and its study by dissection was forbidden. Though famous physicians and artists eventually defied this rule, they did so as brothers in spirit to Galileo, who became the example par excellence for man's thirst for the freedom of inquiry. That we may not yet have overcome this hesitancy is exemplified by Victorian morality and certain recent objections to sex education in the public schools.

The objectivity of biology is particularly disturbing in emotionally loaded issues for the following reason. Biological consideration refrains from value judgments, though it does include an examination of the contribution to the survival of the species concerned. This attitude contrasts sharply with our cultural background which has traditionally culminated in the value of the individual.

The second reason for the special position of biology among the natural sciences is that it is still a relatively "young" science. Historically, the natural sciences progressed from a descriptive to an experimental and finally to a theoretical phase. Compared with theoretical physics and chemistry, theoretical biology appears to be the least developed. A great proportion of biological information is as yet on the descriptive level, a state that appears plausible if one considers the difficulty of reducing complex and diverse organisms to one or a few variables so that the results of experimentation can be handled mathematically.

A consequence of the descriptive-experimental character of biology is that it cannot be taught adequately in the lecture hall and from books alone. If a student is not given the opportunity to observe and examine organisms and to experiment with them, he will have missed an essential and unique part of this field.

Despite its short history of theoretical development, biology has brought about several theories that have proved most fruitful in developing man's concept of himself and the world. The basic theory is the cell theory which biologists have been developing for more than two hundred years. It states that all organisms have cells as their basic unit, that cells are the smallest part of an organism that can be meaningfully said to be alive, and that cells arise from preexisting cells. The cell theory is the theoretical cornerstone upon which other theories such as the germ theory, the theory of inheritance, and the theory of evolution are based. The latter theories have had a more spectacular though hardly a more profound effect on man's concept of the living world. Therefore, they are usually better known among nonbiologists.

Another theoretical contribution of biology to our view of the world is the mechanistic view of life processes. This view not only proved most fruitful in biology itself, but also provided a theoretical basis for many new fields such as biochemistry, cybernetics, and areas of psychology.

The biology of today is about to make another profound impact on man's thinking. The results of biology and their implications with regard to the problem of man's survival require a reexamination of our traditional system of values. One area is man's responsibility for his environment. Traditionally, man is the ruler of the earth, or the steward of God's creation, but in which ways should his obligation be expressed? Should he preserve "unchanged" nature in ecological niches that represent a short period in a rather recent geological era of this earth? Must he, like Noah, preserve species threatened with extinction? Or shall he develop and exercise his ability to reshape the earth and change and create species to the fullest, therewith insuring the greatest good for the greatest number of his own species?

The implications are even greater with regard to man's relation to his fellow man, for he has now reached the threshhold for controlling his biological destiny. Shall he voluntarily submit to the laws of nature, i.e., shall he rely on propagation, mutation, and selection, forces which enabled all other species to adapt to changes in their environments and, thus, to survive? Yet, submission to selection has as its consequence a new appreciation of the value of death and a redefinition of what is to be considered "worthwhile" life.[20] Or shall he aver his nonbiological nature and deliberately place the survival of the individual over the survival of the species?

The redirection of the focus of attention from the individual to the species leads also to a refinement of our ethical concepts. Tiny and apparently inconsequential individual acts, such as the use of a defective muffler, or the overuse of fertilizers and insecticides in our gardens and homes, become vastly immoral if engaged in by all.

Finally, biology, through the study of the evolution of primate behavior, may contribute to a better understanding of the roots of man's social behavior and how it must be changed if mankind is to survive.

CONTRIBUTION IV: DEVELOPS METHODS AND TECHNIQUES THAT MAY AFFECT LIBERAL EDUCATION CURRICULA

In 1964, Clark Kerr described the areas in which universities needed to make adjustments as follows: (1) growth, (2) shifting academic emphasis, (3) involvement in the life of society, and (4) response to the new federal involvement.[21] These adjustments have not yet been completed. It appears to me that they apply not only to the university as a whole but also to the liberal education curriculum and many individual disciplines, but perhaps to biology a little more so than to others. Furthermore, the working out of these adjustments has been compounded by additional problems, also pointed out by Kerr: improvement of undergraduate instruction; unification of the intellectual world; relation of administration, individual faculty, and students to each other; and preservation of a margin of excellence.[22] These problems also exist at the lower levels noted above.

Concurrently with fast-growing student numbers, the American university has had to cope with a knowledge explosion which has affected biology, as one of the fastest growing sciences, more than many other fields. Changes are so fast and so tremendous that the specialist education of the recent past is no longer feasible as an education valid within the confines of biology. For instance, insect pathology, which in 1949 could be presented in its entirety in a textbook written by one scientist, had so grown by 1963 that its most recent advances were but partially presented in a two-volume treatise in which some thirty specialists collaborated. Today, insect pathology would have to be presented in close association with invertebrate pathology, since it has contributed to the development of that field. It has also been reaching out toward vertebrate and other areas of pathology. Technical progress is now so rapid that sophisticated instruments may become almost obsolete within a few years. For instance, in electron microscopy, the first commercial instrument was completed in 1939. Today, at least seven major manufacturers in the Western world produce from one to several models, with the oldest of the most advanced instruments having appeared on the market in 1964 or later and having been substantially improved since then. Scanning electron microscopy, which three years ago hardly contributed at scientific meetings, now commands extensive sessions, exhibits, and a variety of commercially produced models.

The current information explosion in biology may serve as another example. The biologist's problem is no longer one of finding all applicable information published but one of finding the most pertinent information in the shortest possible time. It is no accident that highly individualized and diverse science information services have come into existence during the past decade, most often outside of the university framework––for instance, with the ISI, Biological Abstracts, the Library of Agriculture, certain units of the federal government, and certain biological societies––and that computerized programs useful for personal reference collections are being seriously considered.

The magnitude of the total field of biology and the depth represented in many of its individual disciplines now precludes almost all undergraduates and probably most graduate biologists from either acquiring or maintaining a reasonably detailed and current command of our total biological knowledge. Thus, the problem in undergraduate biology education is no longer what to include but how to exclude many worthwhile areas, since there are limits to the time and extent of the undergraduate study. This problem applies likewise to liberal education curricula.

Furthermore, the explosion of knowledge and techniques has provided many answers and new questions and has generally advanced the total field of biology to the point at which it must be rethought and reorganized extensively. The intellectual reorganization will profoundly affect our ideas as to how biology should be taught. At a higher level, emphases in liberal arts curricula need to be reexamined and, perhaps, shifted.

Finally, biology and other natural sciences find themselves today in a situation unprecedented since the development of modern science. Basic research appears to be gradually moving away from the university into the research institute.[23] If this trend turns out to be of a historical nature, it cannot be reversed. Yet, it will greatly alter university biology, university science, and, eventually, the total structure and mission of the university if the academic community neglects to respond to it in time. Research, if used in the sense given to it by natural scientists, is a major characteristic of modern Western culture, and better appreciation of the nature of research should be one of the goals of any liberal arts curriculum.

Wallis, in his examination of the forces affecting and changing universities in this country, concluded that teaching is not only the central activity of universities but also almost the only one that cannot be duplicated outside of colleges and universities.[24] The much-referred-to conflict between teaching and research is mostly an illusion, for "teaching cannot be done effectively at a high level of quality except in conjunction with many other intellectual activities, especially research."[25]

The problems with which biology must cope today are also problems of the current liberal education. Thus, solutions found in biology may apply on the higher level.

Firstly, approaches and techniques will be indicated that are suited both to the accomplishment of intellectual integration of large areas of knowledge into larger ones and to changing the manner in which this knowledge is to be taught. For instance, biology must currently find means to relate knowledge gained at a lower (namely, the cellular) level to a higher (namely, the organismal) level and, finally, into the total field.[26] On the method sector, biology has been participating in interdepartmental teaching institutes that attempt to improve and reorganize conventional college teaching methods, thus carrying over into teaching an approach which permitted the greatest concentration of thrust in research effort in the natural sciences.

Departmental biology (as contrasted with the interdepartmental teaching of biology mentioned above) was traditionally structured in the form of lectures, laboratories, seminars, and individually supervised research. Current introductory courses for nonbiologists and majors have been successfully employing integrated approaches that do away with the conventional lecture and seminar but retain certain elements of the traditional laboratory. The integrated approach usually permits ~~a strengthening~~ of the emphasis on biological inquiry. Other changes include the successful revival of the historic recitation sessions and their combination with mass lectures, multimedia use, programmed instruction, and the systematic training of teaching assistants in all phases of college teaching. In short, we have been asking the question: to what extent is it possible and feasible to get away from conventional teaching styles?

Axelrod, in his examination of the teaching styles in the humanities, distiguished the drillmaster (or recitation class teacher), the content-centered faculty member, the instructor-centered faculty member, the intellect-centered faculty member, and the person-centered faculty member.[27] His faculty prototypes and their teaching styles occur, in my opinion, also in biology faculties and may in fact be universal, for they reflect not only personality types but also differences inherent in the types of knowledge making up the various academic disciplines and in the methods by which these disciplines may be characterized. During the past one hundred years, the importance of method (including intellectual approach and technical procedure) has continually increased so that today the various disciplines of biology are almost separated better by the techniques they employ than by their fields of content. This refinement has not yet been reflected in the English language which still uses the same word to refer to both intellectual or overall approach and technical procedure. We have seen above that methods also contribute to the significance of a science. For instance, without the invention of the microscope, the cell and the germ theory could never have been developed.

Most major universities require, now, credits in biology for nonscience majors, and this development has forced biologists to undertake an extensive reevaluation and reorganization of the traditional introductory biology course. The current trend is to develop further specialized courses for the upper division nonmajor, that is, a general increase in the amount and extent of nonmajor teaching. This development poses a special challenge that is, perhaps, unique in the teaching history of the modern university. Instead of climbing step by step the hierarchical system of biological difficulty, as is done in almost all curricula for science majors, an approach is to be found that cuts through all strata of difficulty within one term. This requirement is a great intellectual challenge which has been attracting some of the best minds in biology.[28]

A second trend is to make biology teaching more representative of what biology really is by stressing inquiry and research aspects at the undergraduate level. The conventional, two- to three-hour biology laboratory with its tightly knit experiments, avoidance of problems arising from the complexity and diversity of living matter, and dearth of experience with intellectual approaches and experimental designs is not typical for biological experimentation. Accordingly, the NSF and individual universities have been encouraging and sponsoring undergraduate research participation programs and opportunities for independent undergraduate research. Undergraduate research needs to provide for extensive experimental experience intended to develop in the student scientific virtues such as curiosity, persistence in both extent and quality of effort expended, acute judgment, and experience in the application of the scientific method. Furthermore, undergraduate research is not viewed as original research, a distinction I consider crucial if research experience is not to be restricted to the elite among our science students and is to give the nonscience major an opportunity to participate.

Finally, current biology teaching shows a trend toward economizing the learning effort. One sign is that teachers are seriously attempting to minimize the amount of data transmitted and emphasize concepts. However, concepts cannot be properly understood without concrete examples, and it is the very nature of descriptive sciences to require mastery of a larger number of data as a prerequisite to the appreciation of principles. Therefore, the less gifted student, who has been asking in increasing numbers for a college education, will have to work harder so that he may accomplish more intellectually than he did in the past when a college education was not yet available to him. In short, if a liberal education is to maintain its intellectual component, both teachers and students must approach the challenge of maintaining quality with a positive attitude. This challenge applies equally to the sum total of academic education and to individual disciplines. It will revolutionize teaching at the academic level by focusing attention on its creative aspect. As a consequence, teaching, a highly individualistic activity, will be able to satisfy criteria of efficiency commonly applied in our society to the mass production of goods and services. For instance, within the field of biology, an index of existing forms of instruction in biological techniques is just being accumulated. As I understand it, the goal is to furnish a pool of information, derived from the specialists in the field, which may eventually enable nonspecialists to offer pertinent courses at their schools. In the area of the introductory biology laboratory, pools of developed instructional units are already being maintained by certain publishers. By the use of these pools, biologists may and do in fact compose entire course programs from materials developed by other biologists and at other schools. The applicability of this method to the introductory textbook is being seriously considered. The reason is that it will enable the teacher of the introductory biology course to dovetail his textbook with his approach by including the chapters and ancillary references the student should study and omitting the chapters not needed. These are new and exciting means for effective teaching, and their availability is, last but not least, a consequence of college teaching having become a mass proposition.

FOOTNOTES

[1] J. K. Munford, Personal communication.

[2] E. Mendelsohn, "The Emergence of Science as a Profession in Nineteenth-century Europe," in *The Management of Scientists,* K. Hill, ed. (Boston: Beacon, 1964), pp. 3–48.

[3] Munford, Personal communication.

[4] C. Kerr, "The Frantic Race to Remain Contemporary," *Daedalus* (1967), pp. 1051–70.

[5] W. Weaver, *Science and Imagination* (New York: Basic Books, 1967), pp. 1–295.

[6] M. L. Kumler, Personal communication.

[7] Since 1950, the number of member nations in the United Nations has almost doubled.

[8] Cited in Weaver, p. 95.

[9] P. 96; Weaver also includes that scientists must make their activity more intelligible to the public and that science writers must study more seriously what they interpret. Recent publications show that progress has been made in these areas.

[10] M. H. Shamos, "The Art of Teaching Science," in *Effective College Teaching,* W. H. Morris, ed., American Association of Higher Education (Washington, D.C., 1970), p. 85.

[11] "Biology in the Next Two Decades," *CUEBS News* 6, no. 2 (October 1969): 1; examples of such important tools are the microscope or the electron microscope.

[12] K. Jaspers, *Die Idee der Universität* (Berlin: Springer, 1946), pp. 1–132.

[13] Weaver, p. 94.

[14] Weaver, p. 98.

[15] Shamos, p. 75.

[16] Educational Policies Commission, *Education and the Spirit of Science* (Washington, D.C.: National Education Association, 1966), p. 15.

[17] Ibid.

[18] P. Weiss, "Science in the University," *Daedalus* (1964), p. 1190.

[19] Weaver, p. 99.

[20] H. B. Glass, *Science and Ethical Values* (Chapel Hill: University of North Carolina Press, 1965), pp. 1–101; and A. Gulick, "A Biological Prologue for Human Values," *BioScience* 18 (1968): 1109–12.

[21] Kerr, p. 1052.

[22] Ibid., pp. 1068 ff.

[23] "Biology in the Next Two Decades," p. 9.

[24] W. A. Wallis, "Centripetal and Centrifugal Forces in University Organizations," *Daedalus* (1964), p. 1080.

[25] Ibid.

[26] "Biology in the Next Two Decades," p. 3.

[27] J. Axelrod, "Teaching Styles in the Humanities," in *Effective College Teaching,* W. H. Morris, ed., American Association of Higher Education (Washington, D.C., 1970), pp. 43 ff.

[28] CUEBS Publication No. 19, *Biology for the Non-major* (Washington, D.C., 1967), pp. 1–80.

Science for General Students: Remarks on Papers by Donald Mandell and Gertraude Wittig

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The two papers presented this morning and the preliminary comments already evoked from other members of the conference seem to be addressed to three questions:

1. What is science?
2. In what areas has science not related to society or to the "moral sphere?"
3. What do we mean by a "new" liberal education and what role would be played by science in such an education?

Dr. Wittig and Mr. Mandell have each tried to provide an answer to the first question. However, I would like to draw more clearly a distinction between subject matter content and scientific methodology. In physics we have long ago supplemented objective observation and experimentation with detailed, abstract, physical, and mathematical models which parsimoniously summarize the basic mechanisms underlying the fabric of the physical universe.

I feel that the younger biological sciences are only now beginning to develop this type of understanding of living systems, and just as these more complicated biological systems are now coming within the range of man's intellect, efforts to understand and model even more complicated entities such as societies may become successful in the near future.

Thus, I feel the cognitive, systematic thinking practiced by the scientist will inevitably be applied to other areas and that the sooner some aspect of this type of thought becomes accepted as a basic "coping" tool necessary for every university graduate, the sooner the day will come when the intellectual level of the society is high enough to provide the understanding necessary to avoid its own self-destruction.

In addition to developing skills in precise thinking, the student may also find that the subject matter of the sciences is exciting and indeed relevant. The current public concern for biosphere survival problems forms a natural take-off point from which to acquaint a general student with the life sciences.

However, I am reminded of a similar time, the dawning of the atomic age in 1945, which led to the profession of nuclear physicist being a publicly respected, well-known vocation, one which in fact for the layman became synonymous with the word physicist. It is difficult even now to explain to a layman that there are other kinds of physics and that the intellectual accomplishments in these other areas are indeed much greater than in the subfield of nuclear physics. Extending this comparison to the current popular fad, I would conclude that the greatest developments in the life sciences in the next decade would probably not be in the subfield of ecology. Thus even though the biologist might make use of student interest and concern in the biological sciences, the details of the curriculum must be carefully thought out in terms of all the developments now taking place.

Mandell has made the point that until recently ecology has largely been excluded from the usual biology curriculum. We are thus forced to consider whether this area has been consciously omitted from the curriculum because it was thought to be unimportant several years ago and, if so, whether this error in judgment suggests that something is wrong in the method used to develop university curricula.

Ecology deals, of course, with a whole system of biological entities. An analysis of such a system would include topics from zoology, botany, microbiology, and biochemistry, and therefore, this type of system represents a more complex structure than one would encounter in a study of special processes relating only to one subdiscipline. Thus a liberal arts student or perhaps even a biology student might never be exposed to a course which deals with the interaction of all the parts to form the whole. In physics we have the same problem, and I feel the difficulty cannot be explained away by the picture of an introverted scientist who is so concerned with his isolated research that he is not concerned with that which is really relevant.

The problem is that "truth" or the real depth of understanding of processes requires very subtle reasoning and perception. Natural processes are very complex, and the training of professional scientists has forced us to develop curricula for our own majors which is very specialized and esoteric. These courses are not only not accessible to the general student because of the multitude of prerequisites which are usually specified, but it is also probably true that the first course in such a program is very specialized and constitutes only the first of a three or four quarter sequence. Hence, if only the first quarter of such a course is taken, the student would receive only a narrow view of the discipline as a whole.

The answer to some of these problems lies in the development of special courses for the liberal arts student. One of the strengths of the SIU General Studies Program, I believe, has been in the development of this type of specific course designed by the science faculty to communicate with the nonscience student. It is important to realize that the depth of understanding of the student completing these courses will be somewhat shallow if he is going to obtain any feeling for the whole, but we should strive for the proper balance.

Mandell has stressed that the subtleties of the biological and chemical processes involved in the maintenance of the ecosphere should be conveyed to the public and that the implicit faith in an "easy answer" must be forever destroyed in our students' minds. To do this he indicates that we have to prepare the student with basic skills in reading graphs, understanding the precision in experimental measurements, and a few other specifics which are necessary for the layman to communicate with the scientist and hence permit him to be receptive to our argumentation.

Even though I would like to see students develop these skills, I feel that we may be forced to settle for something less because the general student does not possess the freedom in his program nor the inclination to take as many science courses as would be necessary to develop the skill suggested as well as the breadth which is relevant. The design of courses that are appropriate is difficult and represents a challenge which faculty should accept, and not avoid through the establishment of distribution requirements which make use of courses already developed as first courses in the major area.

In question two, the discussion of science curriculum problems has been expanded somewhat to include the subject of science and society and particularly scientific irresponsibility. Experimentation comprises the active part of the scientific enterprise. In physics the experiments are most often based on a great deal of theoretical understanding, though a small number could be considered of the exploratory type, where one typically searches for new phenomena. There is a third type of experimentation which we might call manipulation without understanding. This activity represents scientific irresponsibility on the part of the scientist and is one which we must be on our guard to restrict if it represents a threat to our society.

Mandell has commented on what we might call the scientific irresponsibility of the "establishment." Development agencies associated with the Aswan Dam project or the Coneti Valley in Peru have taken actions which led to environmental crises. Undertaking actions the results of which we cannot anticipate may be excusable. However, if scientific knowledge is available and the decision makers have not informed themselves of this knowledge, we have a case of gross negligence. This type of irresponsibility is difficult for the scientist to understand since he automatically undertakes a literature search before he commits himself to action.

The attitude of some individuals toward science is an example of what I would call public irresponsibility. The claim that science is too difficult and irrelevant is often used to justify a "cop-out" on the part of many students and individuals from assuming the responsibility for becoming well-informed with regard to scientific concepts and developments. The public, some of whom may be our future legislators, must accept the fact that science is an important part of our society and that directly or indirectly they will be making decisions, some of which will require a background in the sciences.

Another aspect of public ignorance of science is with regard to its intellectual aspect. Most people recognize the utilitarian feature of scientific research which led to new material possessions and longer life. However, they very infrequently acknowledge that man's understanding of his physical environment represents a tribute to the human intellect as great and perhaps greater than a Beethoven symphony or a Shakespearean sonnet.

The final question we should address ourselves to in our discussion is what we mean by a "new" liberal education. This question has been raised earlier by several members of this symposium. At first sight, it seemed to me that we are split into two groups, one of which hopes the present phoenix will stay with us for a while longer and the other which thinks that no new bird will appear unless it is from the ashes of the previous one. Drs. Wittig and Marti, and Dean Beard, I feel, have spoken eloquently for the old liberal arts tradition. Chief Fela Sowande has spoken of blending African mysticism and personal empathy with our present rationalism in order to humanize our culture. To accomplish this he indicated that a major revision was in order. In informal conversation, however, I obtained the feeling that this philosophical split has been emphasized to provoke discussion. If this is indeed the case, the major problems appear as problems in the implementation of our ideas. In the sciences we are devoted to rationalism. Unfortunately, there are many areas of man's life in which he must take action without possessing all the information on which to base a truly logical decision. In these cases some guidelines such as a "reverence for life" can serve a much needed function. However, I would like it to be acknowledged that these guidelines are not replacements for rational thought.

With my faith in rationalism intact, I feel that liberal arts science curricula can evolve but should not be subject to a revolution. Thus I would suggest that we need to prepare courses for the nonscience major which will deal with the whole and not some specialized portion. In doing this we must be careful of three things.

1. To obtain a broader knowledge we have to sacrifice some precision in the student's understanding of the subject. Depth must be sacrificed for breadth and the proportion must be well thought out.
2. We must use discretion in the choice of problems which we consider. We should not necessarily choose topics which are in vogue, since these may not be of importance in the future and their treatment may not provide insight into approaches which might be relevant to problems of the future.
3. The development of cognitive coping skill should be a goal of such a "new" liberal education. Some people feel that the obligation of a university is to teach students how to think, how to convey these thoughts to others, and not to serve as a simple dispensary for diplomas and knowledge which may not be relevant five years from now. If this is to be the accepted goal of "liberal" education, then the curriculum must be structured and graded so that logically more difficult material and tests of mastery of this material are presented at appropriate stages in the student's

program. I feel that problems in science can be presented which pose varying degrees of subtlety and which can serve very well to develop the student's cognitive ability.

In conclusion, the chairman of this session asked what change in our current General Studies Physics Curriculum I would make tomorrow in order to implement a move toward a more liberal education of our students. If I were permitted to make such an immediate change, I think I would like to try the program developed at Harvard University and now called Project Physics. This program was developed for secondary schools and it was hoped it would be suitable for at least 40 percent of the high school students. A variety of materials were developed for both quantitative and verbally oriented students as well as students who like to do things with their hands. Tests for all three types of students were also developed.

I feel the program might be an appropriate one for our incoming freshmen General Studies students. My chief concern would be in establishing sections small enough for the program to be effective.

Black Studies in Liberal Education

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In this symposium we are supposed to be directing our attention to the concept of a new liberal education. The idea of a new liberal education, I believe, is significant for two good reasons. In the first place, it is clear that the potential validity of the traditional liberal education is generally recognized. In the second place, this attention to a new liberal education is evidence that something has been happening to transform the old liberal education in such a way as to actualize its validity. I speak of the actualization of the validity of the liberal arts because this is what, of necessity, will be achieved as attempts to bring the traditional liberal arts closer to achieving their stated goals become more successful.

I have been asked to talk on the topic "Black Studies in Liberal Education" and shall, in my remarks, focus on the role of black studies in the transformation of the traditional liberal arts curriculum.

If we consider carefully the objectives of a liberal education, as stated in university and college catalogs, and the means used to attain them, a conflict between means and ends becomes quite evident.[1] It is affirmed, for example, that the colleges of liberal arts attempt to develop in their students those qualities which will make them effective participants in their world. But the curricula themselves militate against the attainment of this goal. These programs reflect the hypocrisy and the narrowness of vision of their designers who have excluded from them vast and legitimate academic areas. It is common knowledge, I believe, that the neglect of these areas is not accidental but rather represents conscious negation of their validity. On the basis of what I have just stated, it should be clear that there exists a remarkable contradiction between the stated goals of the traditional liberal arts curriculum and the goals that it is equipped to achieve. As black students began to appear on university and college campuses in appreciable numbers, they began to criticize openly the almost total exlusion of the black experience from college and university curricula and to demand the inclusion of the many aspects of black experience in them. These demands for the establishment of black studies programs represent, in my opinion, a constructive challenge to the educational establishments of the institutions of higher education to develop curricula that truly function for the attainment of the goals usually associated with the liberal arts.

In the colleges and universities where the challenge was met by serious efforts to develop sound black studies programs, the way for the liberal arts to fully attain all they are capable of attaining was opened. To be more specific, the development of black studies programs has set the stage for the development of multiethnic studies curricula which will ultimately serve to make students more effective participants in their world, which after all is a multiethnic world. Black studies programs have had a significant impact, therefore, on the liberal arts that truly attempt to prepare students to be world citizens. Thanks to black studies, the new liberal arts curricula are attempting to realize the goals which heretofore were treated as worthy but unattainable ideals.

It is also stated that the student in whom the objectives of the college of liberal arts have been measurably realized will acquire competence in the skills needed for extending his understanding and appreciation throughout the range of human experience. Again, however, the very restrictiveness of the traditional liberal arts curriculum has tended to militate against the attainment of this goal. The narrowness about which we speak stems from the almost total commitment of the liberal arts to exploring the achievements and ideals of Western civilization. Demands for the inclusion of black studies in the liberal arts curriculum represent, therefore, a serious questioning of the validity of this drive to acquaint students exclusively with the Western tradition. What is clear here is that the proponents of black studies programs were, in effect, taking the position that an education that is unqualifiedly fixed and rigid cannot be responsive to the needed changes in the intellectual, social, and political conditions of a society.

The total commitment to the propagation of Western ideas and ideals in the twentieth century when news media and rapid modes of transportation contribute to awareness of other civilizations and other cultures is indeed anachronistic. The demands of black students on university and college campuses for recognition of the legitimacy of black studies through their inclusion in liberal arts curricula force all involved, be they black or nonblack, to take a second look at American society and to recognize the process of symbiosis at work in it. It is evident, I believe, even to the most casual observer that contact between the Mexican-American, Puerto Rican–American, Afro-American, and Indian-American cultures and the dominant white culture has given rise to a hybrid culture with heterogeneous characteristics. Further, it is plausible to argue that conflicts between the oppressed and the oppressor have tended to obscure the integrity of America's multiethnic and multicultural composition. I would affirm here that black studies, by their inclusion in the liberal arts, have contributed to creating a genuine awareness of the multiethnic nature of American society. In this I see some movement toward recognition of the validity of non-European cultures. The kind of awareness that will eventually be developed as a result of this new focus will inevitably culminate in the development of a pluralistic perception of reality whereby minority cultural and racial differences will be accepted and respected by the dominant cultural group and will not be dismissed as deviant and lacking in value. It is my belief that proper emphasis given to the true nature of American society, and indeed of the world, will lead to an understanding and appreciation of cultural pluralism. This, in turn, will contribute more than any other factor to the resolution of problems which have their basis in attitudes that have been nurtured by the Western dualistic vision of reality.

This leads us to another of the goals of liberal education according to which the liberal arts student is expected to develop the ability to reason effectively by applying critical analysis and constructive solutions to problems as they arise. In the traditional liberal arts education, the objective stated above seems to be regarded more as an ideal than an attainable goal. It is a well-known fact that the liberal arts curriculum has not, in fact, addressed itself to the solution of problems. This may be due perhaps to the tendency toward elitism that has been part of the liberal arts from their earliest beginnings. Black students with the opportunity to study in colleges and universities in increasing numbers represent a group of Americans who have real problems and who have chosen to direct a great deal of effort toward resolving them. This attitude, in turn, contributes to the achievement of one of the objectives of the liberal education, the development of the ability to creatively resolve real problems, thereby making significant contributions to society. Black studies programs with their problem-solving orientation, once included in the liberal arts curriculum, serve to revitalize the liberal arts so that a major objective of the liberal education is treated not as an unattainable ideal but as a worthwhile and attainable goal.

The liberal arts student, it is expected, will be free to pursue truth by reading, listening, observing, and acting. But the narrowness of the traditional liberal arts curriculum, exemplified by the rigid compartmentalization of knowledge into disciplines, curtails free academic growth, thereby frustrating the achievement of one of the stated objectives of liberal education. This strict compartmentalization of knowledge also militates against the development in the student of the very important skill of grasping the analogies between the various disciplines. Black studies curricula, as a whole, however, are attempting to break away from this narrow system by espousing a broader and more realistic interdisciplinary approach to education. This, in effect, is evidence of the recognition of the interrelatedness of the many aspects of the human experience which can most effectively be presented and studied through a fully interdisciplinary approach to education.

The student who receives a liberal education, it is assumed, will gain through his study an understanding of his total environment. He will develop a knowledge of the values which society has formulated in dealing with its problems. He will also develop an appreciation of the values which man has discovered through his own creative expressions and interpretations in such forms of art as literature, drama, music, painting, and sculpture. Over the years, however, there has been a wholesale exclusion of the creative interpretations of the black experience from the traditional liberal arts curriculum. This denial of the validity of the black experience by educators in the liberal arts, inevitably imposed limitations on the attainment of the goals outlined above. Black college students openly identified the contradiction in an educational system which affirms the importance of certain objectives yet develops a curriculum that militates against their attainment. It was to this contradiction, which went unchallenged for generations, that the demands for black studies called attention. I believe that positive response to the call for black studies cannot but have a significant influence on liberal arts education, for they have infused into it a real commitment to the attainment of stated goals which no longer stand as unattainable ideals. The roles of black studies in the development of this trend can hardly be overemphasized.

While some segments of university populations have been haggling, for some time, over the question of effective student participation in the educational processes, the black students and black faculty have, from the very inception of the black studies concept, recognized the importance of full cooperation of both students and faculty in the educational venture. In fact, efforts have been made to close the traditional gap between students and faculty so that both groups may develop a relationship in which all involved in the programs will be viewed in the dual role of student and teacher. Freedom, therefore, espoused in theory in the traditional liberal arts is, in fact, one of the hallmarks of the new liberal education to which black studies have so significantly contributed.

The recent widespread use of the words "relevance" and "survival" may be traced back to expressions by the first proponents of the inclusion of black studies in university curricula. Black students and black faculty who have been working for the development of black studies have spoken constantly, and with good reason, of the importance of black studies for the survival of black people. For it is inconceivable to have educated men who have control of significant bodies of knowledge, who think clearly, who are articulate, who are prepared to solve problems and make a contribution to their world, yet who have not developed the ability to survive nor the awareness of the need for concern over the question of survival. On this question, black studies have again effectively challenged the traditional concept of the liberal education. Blacks involved in the development of black studies have introduced to the liberal arts a feature that has perhaps been taken for granted for too long––the need for concern about survival. It is, I contend, no accident that on the heels of the call by black people for greater concern over their survival has come a sudden concern about threats to national survival that have heretofore been ignored.

If we agree that the goals of the liberal arts as outlined in college and university catalogs are worthwhile, then we must accept as worthwhile those factors which further the attainment of these objectives. In my brief examination of the role of black studies in the liberal arts, I have tried to emphasize the fact that liberal arts curricula, in general, have tended by their rigidity and narrowness of focus to work against the achievement of the acknowledged goals of a liberal education. I have also attempted to show how the inclusion of black studies in liberal arts curricula serves to revitalize them and open the way for real progress toward attainment of the goals of the liberal education.

The inclusion of black studies in the liberal arts has brought us closer to providing students the opportunity to receive a relevant education, one which will enable them to understand clearly the nature of their society and equip them to develop effective solutions to problems. Students who have had the benefit of this type of educational experience will undoubtedly make significant contributions to their society. Awareness of the interrelatedness of the total human experience, which is fostered in black studies through the interdisciplinary approach, enables students to develop the ability to see relationships and alternatives that rarely become evident to those who are the products of the traditional liberal arts curriculum characterized by the rigid compartmentalization of knowledge into narrow disciplines. Black studies as part of the liberal arts curriculum play a significant role in developing in students an awareness of and respect for all cultural entities of the world as opposed to the almost exclusive concern with the ideas and ideals of Western civilization which has characterized the traditional liberal arts curriculum.

FOOTNOTE

[1] The objectives of a liberal education discussed in this paper are those outlined in several college and university catalogs. Of particular interest to me in the preparation of this paper were the goals of the college of liberal arts that were included in the Drake University general catalog for the academic year 1968–69.

Greek Paideia: The Aim of Liberal Learning

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All the Athenians, we are told, in the first century of our era "spent their time in nothing else, but either to tell, or to hear some new thing." Yet ironically these inglorious heirs of high-minded thinkers of an earlier age, laughed when they heard news of a historic god destined to destroy not only their own mythologems but also the might of Rome.

So also are we today bewitched by the new, but are rarely able to assess it with insight. But before I discuss our educational dilemmas with the high seriousness of tragedy, let me first don a comic mask which will half reveal and half conceal the truth about this obsession of ours with newness.

When the curtain opens on our absurd Aristophanic comedy, the stage is dark save for a campfire, center-stage rear, which casts flickering shadows. Hanging over it from a tripod is a cauldron tended by a Siu Indian medicine man of the newer sort. He wears a beard, something unheard of by the older Indians who could never grow one. On either side in an arc the tribal councilmen sit. Some are young warriors who barely restrain their eagerness for war. They keep brandishing their bows and hatchets and shouting exhortations to the older tribesmen to get up off their asspirations, a slogan one of the not-so-young war hawks of the tribe has recently coined. But these old veterans, battle-scarred by many a skirmish with the Admin Tribe and inadvertently by younger members of the Siu Tribe as they were being taught the art of war by the oldsters, continue to sit silent, immobile, and grim as the chant of the young changes to "Down with the Establishment! We will go to war, civil or otherwise, to end war!" A few youngsters, both girls and boys, not yet initiated into the tribe also dance and shout insults. And I am sorry to say that in this day of newness there are even some toothless hags who have been allowed to join the grim oldsters; they too stare glassily at the fire, unmoved by the enthusiasm of the younger members of the tribe.

On one side of the fire, fuel to heat the pot is stacked in bundles of greenish pelf furnished by the Great White Father in Washington, or perhaps a wampum-exempt foundation, or even the Lesser White Father in the state capital.

On the other side of the fire are the magic ingredients that the medicine man puts one by one into the pot—the daily news, the new look, the new grammars, new Ajax Cleanser, the now (spelled *new*) generation, the new math, the new criticism, the new teaching methods, the new sensibility, the new media. Rythmically the medicine man stirs the mess, bringing it to a boil, and he keeps the fire well-stoked with the green pelf rolled into logs. At last, as the brew simmers, he raises both his arms; a thick hush falls over the sleek-skinned younger warriors. In each hand the medicine man holds a pouch of magic powder, one marked cabalistically INNOVATIVE and the other RELEVANT. As he pours these into the pot, he mutters, with glazed eyes, to the incessant tom-tom:

O New and Youthful Modern Best!
Bring magic light to all the rest
    Of benighted homo sap.
Bring in here-now dynamic zest
To kill the old, the deadly pest
    Of the generation gap!
ONYMB! ONYMB! ONYMB!

And lo, with a fearsome sizzle, the mighty flash of a new educational emprise leaps forth from out the pot.The young warriors and the uninitiated youngsters raise a reverberating shout. The elders rock back and forth, stirred at last from their seeming lethargy, but too feeble to rise from their asspirations and get with it.

The chief, on stage left, arises and gives a solemn oration, the gist of which is that at last the young will have adequate training in modern weaponry and in strategy for seizing power from the old. Howsoever, young and old must stand shoulder to shoulder to let the Great White Father know that more pelf is needed if the great vision of war to end war is to be finally realized. As a matter of fact, as the curtain closes, we find him dictating to his smoke signaler a letter to a Washington office in order to find out what enemy tribes are doing in weaponry research. The formidable name of this office, which seems to be half English and half agglutinative Indian, although one cannot be quite sure, is Educational Information Resources Center Document Reproduction Service.

Like all comedy, this distortion, as I have said, is partly true and partly false, yet it has highlighted, I hope, some of the characteristics of the educational sophist. He tends to sloganeering. If it's new it's good. He makes a false dichotomy between new and old instead of sorting out the good from the bad in both. He tends to a certain kind of rage when a Socrates examines his impatient effusions to try to find out and weigh his primary premises. To use one of his clichés, such a critic is a "reactionary obstructionist." Perhaps a sophist is most easily spotted by his greed for name and pelf, but especially pelf, and by his overriding self-aggrandizement, busyness, and manipulative techniques, and he seeks honor when honor is not due him. Generally he has not learned one discipline from the bottom up. He has not defined the primary function of a university––to allow its student-scholars, both the young and the more advanced, to think long and hard on one discipline, and then on the sympathies and correspondences among all subjects.

To gain a correct view of the whole, the university student must first climb to the high crag of his own particular interest. From there he can look down at only one panoramic view of the land below, and at some of the other crags of learning on a level with his. Then he must look up to assess the distance he must yet go to reach the philosophic heights of humanism, the topmost peak. When he has arrived there, then and only then can a student-scholar see the whole view. He has become at last a humanist, whether his discipline has been in the sciences or the arts. One of our greatest mistakes today is to assume that mathematics and the sciences are not humanistic, cannot humanize man. The Greeks did not make this mistake. For them one of the Muses was astronomy. And music embraced both poetry and mathematics.

As I survey the history of the great thinkers, I am impressed by how universal these specialists were. Parmenides' poem on the cosmic goddess, Aphrodite Urania, "she who steers all things," is not only great poetry but is also a treatise on astronomy, defining time as a dimension of space, for he showed that the planet Venus stakes out a fiery pentagram on the horizon every eight years in an ever-recurring cycle. Aristotle, the son of a physician, was a preeminent biologist. Over the gate leading to Plato's Academy was the injunction "Let no man enter who is not well versed in geometry." The mystic Pythagoras and his school were famed for their mathematical knowledge. The mathematician Newton wrote a commentary on Isaiah, and Descartes, treatises on a dualistic philosophy. Today we see Cassirer, an eminent mathematical physicist, writing on the cosmos and history. In short, to sink deep in the particular is the surest way for great minds to avoid narrowness. Lesser minds will always remain specialists, but their contributions should not be decried even though they have not attained a philosophy of their own and other disciplines. But conversely, I should say that the trouble with a good many self-styled humanists today is that they do not know a specific discipline well, and so, too often they become embroiled in simplistic generalities. They tend to be dilettante appreciators and enthusiasts.

Since only a comparative few will ever reach the rarefied heights of advanced scholarship, what must these scholars do educationally for our children who may become bricklayers or stenographers or businessmen or engineers? How can advanced learning and wisdom be used by us lesser lights to help our youngsters escape the cultural isolationism and class stratification which uncoordinated, shoddy education breeds? How, by the time our youth are eighteen, can they have learned to communicate with all others in the state by virtue of a common core of learning and outlook? What will be at the very center of education?

To quote from A. N. Whitehead, the eminent mathematician and philosopher: "The essence of education is that it be religious. Pray, what is a religious education? A religious education is an education which inculcates duty and reverence. Duty arises from our potential control over the course of events. Where attainable knowledge could have changed the issue, ignorance has the guilt of vice. And the foundation of reverence is this perception, that the present holds within itself the complete sum of existence, backwards and forwards, that whole amplitude of time, which is eternity."

Whitehead is not talking about the aim of education as adherence to a particular religion, or ritual, or vision of the good. He is talking of duty and reverence as the *sine quibus non est educatio.* He is talking of *paideia,* the tuning of the soul so that at every stage of learning it produces noble music. And what is this music, as the Greeks conceived it, but the projection into daily living of the disciplined power that comes from the duty of acquiring the habit of exact observation, and from the awe, the reverence, that we experience when we forge fragmented experience into an ever-expanding notion of the good? This music sings the wonder of man's aspiring to live and to die well. Ethical *paideia* goes deep into the very texture of institutional or individual constructs of the universe. It transforms, at least partially, our trivial, shoddy, envious, egotistic, greedy drives to the noble habit of humbly asking and attempting to answer the great intellectual and ethical questions, and then living as best we can accordingly.

And this is the purpose of learning science, or foreign languages, or mathematics, or the classics, or the arts, or history. Can we who have studied these disciplines and are hot to give our bodies to be burned for them honestly say that they have transformed us in this fashion? If they have not, at least partially, we are not worthy to teach them. And if they cannot, our disciplines should not be taught except on the very low level of expediency, how to earn a living rather than how to live well.

Grand words, some may say, but just how do we get there? Method, of course, cannot be separated neatly from aim. As Boethius tells us, Wisdom's seamless garment cannot be divided. *Theta* for "Theory" is embroidered at the neck, and *Pi* for "Practice" at the hem. But note that Pi *is* at the bottom. Have we this profound difference clearly in mind when we spend thousands for the training of teachers primarily in methodology in workshops, yet keep them hungering for substance? For make no mistake, our teachers in the grades and in the high schools need great learning acquired from sound scholars. Our children are avid in the beginning for knowledge, but too often their eagerness is blunted by teachers who feel intellectually safe only within the confines of a limited lesson plan. Our elementary teachers especially should know history well, for all learning occurred in the past. Today quickly becomes yesterday, and the sum of all the yesterdays are the present, and the present is the seed of the future. Teachers must be able to range easily back and forth over cultural history as they teach.

Early in the child's career he is eager to do his duty, that is, to observe accurately all around him, whether it be strange letters, or trees and animals, or the constellations. And this romance of learning must be kept alive so that he never loses his sense of wonder as he fits a new piece of deep emotional experience or wondrous knowledge into the jigsaw puzzle of his world.

But this will take a vast army of teachers with a great intellectual capital of learning. And it will be necessary to give each teacher no more than fifteen in a class, especially in our inner cities. It will be necessary to get back to the notion of Plato's Academy where there is a bond of affection between the young learner who, like Phaedrus, is courteously taught by the gently bantering master, Socrates, the nature of love. I recommend to all teachers the reading of Plato's dialogue called *Phaedrus,* for in it we see no hostility between the old Socrates and the young pupil, but rather mutual respect and the acknowledgment by the younger man that he is less wise than his master. *Paideia* has given him humility to acknowledge error when the right kind of love has been demonstrated to him.

By the time the child has reached seventeen or eighteen, then, he should have been trained paedeutically, not only to know specifics of disciplines, not only to use them to control himself emotionally, to intensify sublime aesthetic experience, and to enlarge himself intellectually, but also to communicate on a high level with others, using as the common language the best in cultural history.

It is too late, far too late in the university, to acquire the exciting power that comes with emotional wonder through the control of knowledge. I could weep when I teach classical mythology at Southern Illinois University. Here are stories that all children should have enjoyed imaginatively in grade school. It is true that in college I can give theoretical interpretations of the religion, psychology, history, anthropology, and economics that lie beneath them and which philosophically are beyond children (except that intuitively they gather this in an unconscious way when their imaginations are excited). But it is sad to note how culturally deprived my adult students have been. They know nothing of Greek history, of Greek art, of the constellations. When they read in the Bible—that other great humanizer of Western thought and practice—"Canst thou bind the sweet influences of Pleiades or loose the bands of Orion?" they can form no mental image of these stars. Although they are living in a so-called scientific age, they have never looked up to the heavens and seen cosmic order. Again, when I ask if they have ever seen Apollo's laurel, they reply that they have not. They do not know that the bay leaf is laurel, that the simplest herbs were a matter of mystic awe to the Greeks. My students cannot visualize common flowers like narcissus or trees like the towering hemlock. They have never seen even pictures of them. Yet these are all relevant to my theology.

The question then is this: granted democracy in education, will it be realized on a high or a low level? Can we raise almost all to an aristocratic view of education where the best in the history of all cultures can be learned, assessed comparatively, and––most of all––used for *paideia,* for living each day artistically and rationally as if it were the last?

It is a monumental task, but it can be done if this type of education is given top priority not only in our budgets, but more importantly, in the minds and hearts of all liberally trained *scholar*-educators, and all *scholar*-administrators. We shall have to start when the child is very young, before the tawdriness of the second-, third-, and fourth-rate of his environment has seeped into his very bones while, at the same time, his mind and heart have been shriveled for lack of intellectual and aesthetic sublimity. Our scholars, who are "masters of those that know," must be listened to, instead of the manipulative clamorers for funds for ill-thoughtout sophistical schemes that fizzle out. The whole country must mobilize behind men who do not have their hands out for money only to entrench themselves in power over education. Good scholars proceed cautiously, saving the best of the old and carefully assessing the new to adopt only the best of it.

To conclude: our children must, by the time they have reached eighteen be educated liberally. There is no new or old liberal education. It either is liberal or it is not. Liberal education does not mean a cerebral hop-skip-and-jump over survey courses in the so-called humanities. It means that the child seizes eagerly on the *specifics* of disciplines, and *then* fits them gradually into the pattern of the whole by the time he is eighteen, when he sees at last the grand design morally and intellectually that his years in school and he himself have shaped.

If in one generation we can make giant strides towards paedeutic education, then the universities, which should be devoted to serious advanced study and thought, will not be rashly overrun by unproductive busyness, sophomoric "outside activities," or specious "involvement," to use one of the sophists' favorite, undefined clichés. The great-hearted scholars on the outposts of learning will protect the inner fortress of exciting learning on a lower level by their very disinterestedness in all save truth and the search for truth. The ideal shapes the practical.

If children have been nobly educated, as men they will be free to pursue manual labor, crafts, or the professions, knowing they will be respected and justly rewarded as contributors to the whole welfare of the state. And all men will speak a common language, that of humane learning, for all will have been well trained in the arts and sciences to the full extent of their capacities. And all men shall be like Chaucer's perfect Knight, who loved honor and truth, freedom and courtesy, for their souls will have been well tuned to lofty ethical values through *paideia.* Utopia? Of course. But without the blueprint, a magnificent building never gets built.

Liberal Education and Social Responsibility: A Contingency Plan

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In the paper prepared for you today I wish to concentrate on the research production role of universities, its estrangement from apparent "relevancy," and the problems of forced "relevancy" at times of acute national crises.

In all that I will say I hope that you will come away with the following three observations: one, that it is impossible to force creative work in any field of scholarship; two, in apparent contradiction to the above, that in the area of our domestic crisis a redirection of the nation's scientific resources is needed but can only come about through assimilation and utilization of the knowledge and techniques of those parts of the liberal arts which most scientists tend to disdain as too soft and irrelevant to their interests; finally, that this latter process can only be brought about through the institutionalization of ignorance and not the dissemination of knowledge.

These three conclusions stem from a very deep and personal understanding of the problems of American universities as both student and observer. I need only look out of my office window at the time I write this to see a line of students picketing the State Department. Student demonstrations and anger I am sure you have seen many times in the past few months. Further, I have just returned from a trip to five campuses (Yale, Columbia, Berkeley, Santa Barbara, and UCLA) where business to say the least is not as usual. The university's first business at this time appears to be political. Its next line of work is to get its own house in order. I might add at this point that during my visit to Berkeley, a week ago yesterday, I found myself, in utter terror, running away from a club-swinging, riot-equipped policeman. The epithet "pig" came to my mind but was not uttered above a whisper. I truly was, at that moment, a member of the establishment in my own mind, but I suspect that any one of those policemen would not have asked for my credentials prior to pounding me over the head if he had wished to. It became clear to me at that time that anything I could write for this conference would have to be taken in the form of a contingency plan for the future of the university.

For I, as many of you, have no wisdom or intelligence to predict that anything you or I write will have any relevance for the future of liberal arts education, let alone the university or the nation.

Along with the concern for national politics, the placid halls of our great universities have been shaken by the impatient and insistent demands of students for more relevant instruction and research in the areas of our urgent domestic problems. In addition they are dissatisfied with the role the American university has played in support of the war machine. The badge that was sold at the New Mobe's demonstration this past Saturday read, "Strike the War Machine," a slogan not only relevant to the federal government's efforts in Washington but to the university as well.

The radical reconstruction of the university that might lead to a "new liberal arts education," however, is not as easy as the closing down of a few defense-related contracts or, as it appears, moving those contracts off of university campuses to less visible, and perhaps, more effective locations to do their research.

It is much easier to close down research than to specify the direction such research ought to take. If it were possible to specify the direction of that research it probably would be difficult to find people to do it. Finally, I suspect, even if we did find people to do that research, I would doubt that we would be able to find money to support them.

I do not want to dwell too heavily on the issue of money but I am sure you are aware of the tightening of belts going on across the nation. Any call for redirection is banal if it does not recognize that precisely at the time that universities seem to be getting interested in research relevant to our domestic needs—–research and training funds (often appropriated under the guise of supporting our national defense) are being taken away.

It is perhaps unfortunate but true that the prime role of the university is in the search for truth and knowledge. I say it is unfortunate because in the short run universities are being asked to serve a political role. I personally do not oppose this political role so long as it is short run (as if we can avoid it); and because frankly we the "older" generation do not seem to recognize nor appreciate the effect the war is having on the young. They fortunately have the freedom and the temerity to insist on first things first. I am not sure where the universities will wind up if that first issue does not let us get on to second things second.

My contingency plan for the universities is a scenario which postulates the existence of buildings, typewriters, xerox machines, interested personnel, and money to move into the second stage. It is predicated on the hypothesis that the university's historical role as bastion for the search for knowledge will be continued and, finally, that there *is* a revolutionary role that can be played by our universities.

What is revolutionary about the university? What is revolutionary about scholarship? Pitifully little if one looks for the clenched fist, or the gas mask, or the molotov cocktail. Enormously great if one is ready to grant that we know relatively little about our society and that what little we do know really cannot help us in the future, or at times of crisis. Social science seems barely able to get its numbers straight, let alone feed policy-relevant research into the governmental agencies constructing the small remaining programs that deal with domestic issues. It is interesting that in this comment I place myself with both the students as well as with that enigma of a man, Daniel Patrick Moynihan. I might add quickly that it seems to me that their diagnosis of the situation is correct, but their prescriptions come from the age of alchemy.

I do not have the time to detail all of the logical arguments against the prescriptions of current social diagnosticians. I would simply assert that I, like the rest of them, have my own secret prescription, and it is that which I wish to present to you as the second stage contingency plan; a plan relying upon ethnic studies as one vital concern of a liberal arts curriculum.

At this point I would like to make one observation on what follows. That is that in what I am to say much will sound as if it is similar to the current rhetoric of student militants. Please do not be deceived. I recognize many limitations to what I am going to say as it relates to immediate implementation.

Getting that point aside let me give you a case history. It is a fairly esoteric, although quite current, example of the significance of the exciting and revolutionary possibilities for the confrontation of ideas possible in the ivory tower. Interestingly enough as I see it, this confrontation will come from the softer social sciences (some call them humanities) and is relevant to a huge mass of material generated by the tough-minded social scientists. Further the confrontation battleground is in the area of studies of the Negro in the United States, and the fields involved are, if you wish to tell the teams apart, linguistics, folklore, anthropology, and history versus psychology, sociology, and economics.

In brief the case goes something like this. Working under the assumption that we lived in a melting pot and that if there were anything like distinct cultures in this country they were class linked, the hard science guys developed conceptualizations of the Negro which discounted the possibility that anything like a unique Negro culture existed. It was as if after one or two generations in this country the Negro seemed already assimilated into the class system and had lost all marks of ethnicity. So too with other ethnic groups. While it is indeed possible to place an individual in a socioeconomic class when one looks solely to such indicators as education, income, occupation, etc., our national domestic problem results because all available data indicate that Negroes as a group are not making it in American society. If ethnic identification was considered at all by the hard social scientists, it was just one of many cuts in the computer deck. Ethnic differences were and still are defined in terms of how various ethnic communities perform on standardized tests relative to other (usually white middle-class) groups. The data came in hot and heavy and seemed to suggest that Negroes, as the case in point, continually did worse than whites. The theory that developed around these findings was that the relative poor performance of blacks compared to whites was the result of the deprivation encountered early in the development of the Negro child. This was particularly evident in the child's language ability and his attempts at learning to read. Out of this background came Head Start, a major, high priority, heavily funded, federal program attempting to correct the early deprivations of the child, concentrating intensely on his ability to use the English language.

I think it fair to say that by the same indicators used to diagnose and prescribe for the intervention program, Head Start has failed––at least in terms of the theory advanced which attempted to justify early intervention to deal with the supposed verbal deficit and poor grammar observed on standardized tests.

The above is background for what was going on in other parts of the liberal arts world. For all the while that the hard scientists were developing data on the Negro's inability to use language and the practically nonverbal quality of the Negro child (due, as the Head Start manual says, to the lack of verbal stimulation in the home) folklorists were collecting streams and streams of verbal material from the Negro community. In fact many folklorists believed that the Negro culture was highly verbal, they were not aware of the nonverbal hypothesis perhaps because of their ignorance of social science theory, perhaps because they insisted on relating to these individuals in their own context. The contradiction became even more evident when linguists started systematically looking at the syntax of the Negro linguistic system and discovered not only a systematic though different grammatical system in the ghetto but also found that this system had similarities to Negro languages called creoles described throughout the Caribbean. The system used in the ghetto was not error-filled as claimed by the hard scientists but a different and grammatically systematic language to be understood on its own terms. Further the historians, long interested in recapturing the nation's past as it related to the Civil War, came upon a huge body of Negro verbal lore, often gathered by avowed racists but amazingly consistent across observers and over time. Thus in the soft sciences we are presently seeing a confrontation unlike anything that could be managed in Berkeley or at Columbia. A confrontation between two sets of ideas about Negro culture––neither one of which can stand without the other one crumbling. It is becoming evident that the one flaw in the traditional social science procedure, when looking at Negro language, was the assumption of one and only one normative system of usage. Thus any comparison taking one system as the norm and attempting to make judgments would produce errors.

The point of this case history is to underline the need for well-staffed and competent centers, departments, etc., relating to American ethnic groups. What the soft heads seem to be discovering is a culture, denied and unexplored for many reasons by the hard social sciences. In such a discovery a whole series of questions arises about our society, its component groups, their interaction, and their self-image. Indirect at the moment but looming on the horizon are possible government policy-relevant inputs, such as how to teach reading to Negro children using their unique dialect system as a vehicle to teach a second system. A pretty fair payoff from nonpolicy-oriented liberal arts scholars.

One must immediately ask what other aspects of our contemporary domestic scene can have light shed on them by a collaborative effort by the hard and soft social sciences. This question remains to be explored. We have much to gain from the development and the encouragement of relationships across disciplines in the liberal arts which have not previously seen fit to converse with one another. However, where exchanges have taken place they have often been one-sided——the software man thinking that he had something to learn from the hardware man and not vice versa. We social scientists tend to be somewhat snobbish when it comes to our friends in the humanities. Yet as you can probably tell, I think there is a wealth of material to be mined from such an interaction.

The difficulty with all that I have said previously is that there is at present no middle ground to be found between the hard and soft heads. The sophisticated methodologies of the hard-nosed social scientists have led them to deny the validity of the type of data often presented by the soft heads. So too on the other side where the disdain for number-crunching has led most scholars in the humanities to smugly assert their aloofness from issues of concern to the hard heads. There is a communication gap, but not simply at the national level; we could look to our own house, the university, to see a gap which exists between scholars studying the same phenomenon. However, if it were possible to bridge this gap by force I doubt whether it would be productive——we are dealing in the most part with people who are somewhat set in their ways (that means old and possibly young alike). We should look to cross-discipline training rather than attempting to force new concepts into old containers.

The student himself becomes the final element in this design. His exposure to curricula relevant to ethnic studies from a whole series of perspectives seems critical. The recognition that studies of America's ethnic minorities from a purely scholarly approach (as distinguished from political) are necessary, is important to this consideration. Black studies, for example, can only be seen as academically legitimate when this is the case. But further, I think I have made a case for the production of a new type of scholar, one familiar with both the hard and soft aspects of man's knowledge and skill bank.

Finally, and most importantly, creativity cannot be forced. We have tended to view our domestic plight in much the same way that the Air Force looked to the RAND Corporation to deal with its mission-oriented problems. The attempts by the government to cure our social ills assumed (at least if we take OEO as an example) that our knowledge of the causes of poverty was clear and that all we needed to do was implement corrective programs on a national basis. If we go back to the Head Start experience and see what the social sciences are capable of, we see that our contribution is slightly less than miniscule. At best our evaluation techniques seem the best developed, yet these offer us only information on what fails, not what kinds of interventions will succeed. I say this in spite of the claims made in the Coleman Report and the OEO-Westinghouse Study. Both, while being more sophisticated approaches to the process of governmental decision making, offer little that could strongly and definitively draw from the data about program prescription. So too with the excellent study of income maintenance being done by the Institute for Research on Poverty and MATHEMATICA for OEO. While the latter experiment certainly describes the highest state of the art vis-a-vis social science's relevance to mission-oriented research, its underlying assumptions about the causes of poverty are not new. This is not the place to go into the assumptions underlying the nature of incentive effects on the poor or the argument about homoscedasticity versus heteroscedasticity, but *both* of these views correspond to the views currently in vogue among academics about the nature and causes of poverty. The university's role, and particularly the liberal arts role thus, in my mind, must be directed towards the reevaluation not only of the problems of the poor but also the nature of our social system. I have suggested that what is needed is creative thought on the problems of our social system and the reevaluation of social science's assumptions about it. If I saw greater flexibility on the part of individual thinkers and scholars, I would be optimistic about possible payoffs from increased concern and interest on behalf of university involvement for short-term or middle-range payoff. However, being an advocate, and unabashedly so, I recognize that if any payoff is to be obtained it can only occur by the traditional routes by which the direction of scholarship has been influenced over time. While I see some possible great contributions coming from the humanities, I do not deceive myself into believing the revolution in scientific thinking about our domestic ills will come shortly. Kuhn has described how slowly revolutions in scientific thought occur. If the current demand for relevancy by students leads to a larger group of scientists testing out paradigms of thought without questioning those paradigms and their underlying value orientations, I hold no hope. But if large doses of humanistic, value-questioning thought are fed into the system, it will take only a small cadre of people to turn our nation's scientific thinking around, satisfying students and scholars alike.

In the end it is the student of today who will produce this change. Yet the present state of student satisfaction with what is being taught them appears to be at a low ebb. Whether some national survey might prove me wrong I cannot tell. One only wonders whether some of the expressed dissatisfaction relates in part to an offshoot of what I have said to this point. The received position in social science has remained entrenched precisely because there has been little questioning of the underlying assumptions held about the world we live in. This attitude is held by many in the research world and rubs off, I am sure, in the process of teaching.

It is in the classroom that much of what is known in our disciplines is transmitted to the student. If my view of what I hear from students concerning their cry for relevance in the classroom is accurate, they seem to be indicating that much of that which they hear from their teachers bears little resemblance or relevance to what they see around them. Yet what they hear seems often to be the final word on the subject. What seems missing in such a context, from both student and teacher alike, is something I like to call the "relevance of ignorance."

All scholarly inquiry starts from a question not an answer. Questions stem from ignorance and not knowledge. The process of question-answering, producing new questions, is the fundamental backbone of all scholarly inquiry, be it in the hard or soft sciences. Yet, and again I am talking from personal experience, education seems to have failed in its attempts to glorify ignorance––rather it has institutionalized answers.

My contingency plan thus calls for the glorification and institutionalization of ignorance as the fundamental building block of the search for knowledge. It is also the basis upon which most of our reforms in the educational process ought to be oriented. A good teacher from this perspective is one who, at every stage in the teaching process, communicates, in no uncertain terms, the tentativeness of knowledge in his own discipline and in his own mind. The student, in turn, must learn that what he receives is to be questioned and probably will be, and is, by someone else. He thus should be shown his own role in the questioning process, a role which early fits him into the process of reexamination and discovery. A process whereby he learns not simply of the mass of accumulated knowledge in a field or problem area but of his potential role in producing new knowledge through the discovery of new questions. Thus in every step of the process, the freedom, nay the encouragement, of the question should be the teacher's goal. His role should be the communication of ignorance––not the dissemination of knowledge.

I started this paper with a critique of social science research on the Negro and attempted to show how existing knowledge in the area may be questioned by material gathered in other areas, particularly the humanities. I further indicated that there is a need for greater two-way communication between the humanities and the social sciences, suggesting, somewhat hesitantly, that great strides may be made if alternative institutional arrangements are developed to facilitate cross-discipline communication. Recognizing the existing rigidity of most disciplines, I suggested ultimately that the burden of tomorrow rests on the students of today and the educational process to which they find themselves exposed. Finally, I indicated that students should find education of greater relevance if they were taught not to receive knowledge in a passive way, but rather to learn to question and glory in ignorance.

The latter part of this set of ruminations thus leads one back not to a radical reconstruction of the university but to a reaffirmation of the role of the university and of the search for knowledge, which has guided scholarly inquiry for some time. My critique thus ends with the observation that universities have not lived up to their own guiding principles, let alone those of society. When the traditional role of the university is affirmed, not when it is destroyed and remade, we will see greater contributions of that institution to the problems of society.

The Liberal Arts and Liberal Education

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As James Bryant Conant has remarked, American higher education is no longer confined to "educating young men born to the purple." Rather, it is a vast sprawling enterprise which, both directly and indirectly, touches the lives of a large proportion of our citizenry. Consequently, our student bodies come from all walks of life, and they bring with them the attitudes and expectations of a large cross-section of the subcultures of the United States. The traditional "liberal education" of a well-born young lady or gentleman could afford to concentrate on polishing the student, giving him the tools of polite conversation and the veneer of civilized man in the Western image. Such education will not meet the needs and the demands of the current generation of students, and they are telling us so in strident voices.

It would be both unfair and untrue to charge that we, as educators, have not made efforts to modify college and university curricula in order to adjust to changing times. But our adjustments have been geared to the knowledge explosion within the traditional disciplines, rather than to the changing interests and needs of our students. Various "general education" programs, usually consisting of a series of introductory courses in various disciplines, are in existence in our schools, and are required of students in the hope that through broad exposure to the specialized departments within the university they will come to understand the universe of knowledge. Experiments such as the "great books" program at Chicago, interdisciplinary courses, and non-mathematical science courses have been devised in order to take larger strides towards meeting the student on his own ground, while still conveying the excitement of intellectual discovery and the richness of the academic tradition to him. In a few instances, most notably at the University of California at Santa Cruz and at the Associated Colleges of Claremont, small, elitist, residential colleges have been tried as a means of establishing a real community of teachers and students in the "best" liberal arts tradition.

By and large, "general education" programs at large universities have failed either to excite student interest or to instill in them a respect for the academic enterprise. Experiments with honors programs and collegial arrangements have had some successes, but those successes have come, for the most part, when they dealt with students with superior preparation for academic pursuits––students more comparable to the elite we used to educate than to the broad cross-section of the population we now claim to serve. Even the movement towards mass education in community colleges has fallen short in that it has parroted the curricula of four-year institutions in liberal arts areas and largely failed to salvage so-called marginal students. We need desperately, then, to ask ourselves why the potentially rich tradition of the liberal arts has not served the needs of students in contemporary colleges and universities, and to seek remedies for our failure.

One of the chief reasons why the liberal arts are not currently realizing their potential to enrich student education is that universities have presented them from *faculty* perspectives, rather than considering their real potential for the *student* in light of educational objectives. The liberal arts are jealously guarded by fragments of the university community––the traditional disciplines and their concommitant departments. Each discipline has a vested interest in "exposing" students to its specialized knowledge competencies. Consequently, university departments multiply courses and prerequisites in the hope that through exposure to their various subspecialties the student will acquire a sense of the richness of the disciplines. Each professor, because of his own narrow training, is convinced that if only students were aware of *his* field, and *his* specialization, they would become as knowledgeable and educated as he is. As a result, virtually every university department makes a case that *every* student should have at least a survey course in its discipline. In fact, each department can make a good case for itself because it can be and is argued that each student should have an overview of history, an acquaintance with his government and society, a sense of literature and its enjoyments, a capacity to appreciate art and music, a knowledge of the basics of physics, chemistry, biology, and any other specialized study which is incorporated into the structure of the institution.

The student, on the other hand, finds himself confronted with a long list of required courses which come to be viewed, by him, as hurdles to be conquered in order to get a degree. Never mind that many of these courses are uninterestingly taught, designed more to drill him with facts than to give him insight, or simply geared to a grading and examination system which is administratively convenient. If the student seeks to understand the present, he is often asked to memorize names and dates from the past. If he is curious about his natural environment, he is too often required to repeat canons of science which seem unrelated to the real world in which he must live. If he wants to test ideas, he may find his professor more concerned with the recitation of dead philosophers his professor reveres or, worse yet, with repetition of lecture notes on an examination. If he wants to understand the political and social system, he is typically confronted with jargon and organizational charts which consume his time and deaden his mind.

What, then, is to be done about the liberal arts? As educators we recognize the richness of an ancient and honorable tradition, and it would be folly to reject it. We have experienced the excitement of encountering great minds and great ideas through books by authors long dead. We know the thrill of discovery through laboratory research. We tend to be convinced that *our* liberal education, whatever particular form it may have taken, enriched our lives, stimulated our minds, and alerted us to the possibility of a life of experiment, richness, and beauty. Our real concern, then, is to transmit a living and venerable tradition of intellectual curiosity and ethical and aesthetic awareness to future generations, and to do this, we need to ask more questions about students and their needs and less about the requirements of our disciplines.

As I see it, there are two related problems which must be approached in any serious attempt to remedy the current situation. First, we must attempt to define the liberal arts and liberal education, carefully distinguishing them from professional training and disciplinary requirements. Secondly, we must become more liberal about liberal education. The first question involves considerations of subject matter and behavioral objectives. The second question focuses upon the institutional setting, including the matter of courses and requirements, and the learning process as it relates to instruction. The two questions are related, and any proposed reform of the educational system must deal with both of them in concert.

To approach the first problem, that of defining the liberal arts and liberal education, we must ask what subjects should be included under the liberal arts and what we hope the student will gain from his liberal studies. To the first point, there is no universal answer. I believe that each university or college faculty must make the determination as to which disciplines and departments should be included under the broad title of liberal arts disciplines. No faculty is likely to find this a simple or noncontroversial task. Some decisions are relatively easy; for instance the distinction between philosophy as a liberal arts discipline and airplane mechanics as an occupational program is not hard to make. Most decisions of this type are, however, less clear; for instance, is engineering a liberal art? is social welfare? is painting (as opposed to art history)? In order to distinguish liberal arts disciplines and courses from professional or occupational ones, then, we must have a clear idea of the behavioral objectives which we hope that participation in liberal arts disciplines will produce.

Unfortunately, there seems to be no universally accepted formula for behavioral objectives either. University and college faculties need to address themselves to this question, as well as to the question of subject matter. I can only suggest that whatever is included in a liberal education should be designed to encourage the student to become intellectually curious, aware of the complexity of the world he daily encounters, capable of thinking critically about the situations he faces, susceptible to the beauties of man's literary and artistic heritage, conscious of the cultural forces that shape his attitudes and of the differences between his own culture and those of others, and excited about the possibility of living life as a creative encounter with the natural and social forces which impinge upon him. I have no desire to debate the inclusiveness of this list of goals, nor do I particularly wish to defend them against alternative conceptualizations, at least not in this paper. What I wish to suggest is that the collective intelligence of university and college professors be brought to bear on the problem of defining the goals of liberal education in order that each institution can develop some rational reason for including some types of subject matter and excluding others from the liberal arts program.

Having approached the problem of subject matter and goals in a general way, a further problem arises. It arises because the mere definition of liberal arts subject matter and of the goals of liberal education does not approach the question of curriculum structure and teaching methods. When these questions are raised, I must plead strongly that for liberal education to be effective, both curricula and teaching must themselves be liberalized.

For years we have argued about which courses were absolutely necessary to a proper or liberal education, that is, we have argued about requirements. Why don't we stop the discussion? If we can develop some conception of the general scope of liberal arts subject matter and some formulation of the goals of liberal education, why not give every student the broadest possible number of options? I would personally recommend that *no* particular course be required of all students. The assumption here is that if the areas included as liberal arts (perhaps "liberalizing arts" is a better term) are carefully chosen, *any* course which is properly taught will leave the potential of opening the student's mind, giving him an opportunity to test ideas, and promoting an active engagement with the world of which he is a part.

Doing away with course requirements seems to me to have two very real advantages. First, it puts the burden of choice upon the student where, with proper advisement, it properly belongs. (After all, it is *his* education.) Secondly, it puts every faculty member in a position where he must strive to challenge the students' interest and imagination. If no course enrollments are guaranteed, professors may begin to ask more serious questions about their teaching.

Perhaps I give both students and faculty too much credit. It is possible that, given wide options, students will make poor choices, choosing the easy way out instead of seeking to achieve excellence through rigorous academic application. It is also possible that in the competition for students, faculty will dilute course requirements, popularize their subjects at the expense of real content, and otherwise weaken the educational process. But the responsibility for insuring quality rests with the faculty, who hopefully are genuinely concerned with it, and with the students, who hopefully can recognize it and will value it when it is encountered.

My key assumption is that if disciplines and faculty members must compete with each other for the opportunity to transmit their wisdoms, they are much more likely to ask what the student really needs and wants, rather than to ask how they can "cover" a given amount of material or outline the dry bones of their academic specialties. I am giving academics credit for something I hope that substantial numbers of us have––the ability to think critically and to inspire students by the thoughtful interaction which we have with them. If this sounds naively hopeful, I can only plead that the current practice of attempting to overwhelm students with vast arrays of facts, without emphasizing the process of thought, is deadening both the teachers and the taught in America.

I have not been specific about teaching methods, and that is deliberate. No particular format is inherently superior to another. There are times when a lecture delivered to hundreds of students is an exciting and challenging intellectual experience. There are other times when small classes, seminars, and one-to-one tutorials stimulate the participants. But any format can be dull and uninteresting. Laboratory sections in science courses, for example, can be adventures in discovery, but more often they are mechanical drills. Each professor needs to approach education with an open mind and to experiment with his own skills in order to find the best ways in which he can relate to students in a healthy educational interaction.

Notice that this presupposes a great deal of institutional flexibility. It means relaxing rigid requirements concerning class size and hours of meeting. It probably means a complication of the whole process of building design and class scheduling and course descriptions. And the ultimate horror is that it challenges the accreditation structures of American higher education by forcing the evaluation of institutions on the basis of *performance*, rather than structure, which is only to say that the same standard must be applied to institutions as to students.

At every turn, then, I suggest that we define the goals of liberal education and relate all our activities to the question of how these goals may best be obtained. I advocate that performance standards be applied to students, to teachers, to curricula, and to institutions. The matter is complicated, but I believe it must be dealt with.

Thus far I have not dealt with the question of literacy. Traditionally, we have assumed that in order to be literate a student should have a minimum number of hours in formal English courses, and sometimes we require a minimum number of courses in mathematics. Anyone who believes that these elements of the curriculum are accomplishing the goal of insuring student literacy is deluding himself. Students are not necessarily illiterate by virtue of missing such courses, nor (ask any professor) do they necessarily become literate through passing them. The requirement for literacy is part and parcel of every liberal arts course, or it should be. Where students are deficient in basic skills, it should become apparent to the professor, and the student should be assigned to meaningful exercises (courses sometimes included) which will enable him to develop the skills necessary to cope with academic subject matter. Tutorials, programmed instruction, computer-assisted instruction, and other methods should be able to augment the process of liberal education in order to provide a wider range of options in acquiring basic literacy skills when they are needed by a student.

There is a final proposal I wish to make regarding the liberalizing of liberal education, and that concerns an experiment that is now being tried in a few institutions. There are evidently at least some students who do not wish either to prepare for a vocation, a profession, or for graduate work in a specialized discipline. Such students are not now served by the division of our curricula into major subject areas and professional and vocational schools and programs. For these students, it is a clear and an unnecessary imposition to require them to enroll in a discipline by declaring a major, or to enter a specialized program of professional training. It would seem appropriate, for such students, to allow them virtually complete flexibility in their own educational programming, mainly stressing the liberal arts, but allowing them to take limited and introductory training in such professional areas as business and education as well.

A flexible program of this nature presumes that students taking a general liberal arts degree will be given careful and competent counseling. It becomes the responsibility of the university to insure that such students do not pursue a general degree expecting that it will prepare them for direct professional employment or for immediate entrance into a specialized course of graduate instruction. True liberal education must be viewed realistically by both student and faculty advisor as an education tailored more to the personal goals of the student than to the institutional structure of society. Liberal education is an exercise in the exploration of the self and the world, not a planned program directed towards future employment.

To summarize, I have advocated that we reexamine the way in which we approach liberal education. I suggest that individual university and college faculties give serious consideration to defining the behavioral objectives of their liberal arts programs, defining appropriate subject matter areas in light of those objectives. I have suggested that maximum flexibility be accorded to the student in choosing his course of study in the liberal arts, such flexibility being designed to encourage experimentation by the faculty, the student, and the institution in their attempts to achieve the goals of a liberal education. I am pleading that we make the student and his education the focus of our efforts, rather than tailoring education to the demands of academic disciplines and accrediting agencies.

Towards Postindustrial Man: Some Observations on Liberal Arts Education for the Future

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The future is closer to the present nowadays, making the role of prophet both more difficult and easier. When the pace of social change was slower a prophet did not have to face in his lifetime the embarrassment of having failed in his prophecies. When Marx prophesied that the lot of the working classes would become progressively worse, the time scale he had in mind extended beyond his lifetime. He did not have to face up to the fact that his prediction was wrong. Today, any prophet who attempts to predict about the changes coming is predicting ordinarily about changes that will take place before the end of the century.

The role of prophet has been made easier in our day because we know more about the trends in the present than ever before. We know that the society we will be living in over the next few decades will be different because the changes presently underway are so massive and obvious that we can hardly escape discerning at least the broad outlines of the shape of the society to come.

We know at this point how many of us there will be in the next few decades. We also know how our occupational structure is changing, and just a mechanical extrapolation of present trends leads to a prediction of considerable change for the near future. We are entering the postindustrial phase of modern society, say some social scientists. If the central social institution of the industrial society was the corporation and the prominent physical structures, business offices and industrial plants, the central social institution of the postindustrial society will be the university, with the campus and its associated research laboratories, the main physical plants of the future. The postindustrial society will be one in which the problems of production of goods and food will be mainly solved, at least from the technical viewpoint. The main problems of the postindustrial society will be those which go beyond production to the development of increasingly complex technology and the management of such a world.

It will be a society which will value education highly: indeed, it will have some of the signs of a meritocracy in which those who rise to the top will do so by virtue not of their birth or social origins but because they have demonstrated extraordinary professional and technical accomplishments. Michael Young's social science fiction novel *Meritocracy* depicts a society of the future in which one's social position is fixed by a system of intelligence and achievement tests, a vision of the future which Young projects as an extrapolation of present day trends in the use of testing. It seems doubtful whether the proximate future will be as Young predicts, yet there can be little doubt that the needs of the postindustrial society will be such that it will value technical competence highly. Since technical competence is difficult to measure directly, in practice this may well mean that men will be judged largely by the years of schooling they have completed and by the degrees and certificates earned. Plato imagined his utopia to be ruled by a set of philosopher kings: the future society may exact as the price of admission to the circle of the elect the attainment of the Doctor of Philosophy degree.

Following this line of envisaging the future to be some sort of postindustrial society, it follows that the main fault in the social structure along which major cleavages of a political and social sort would arise is the line between professional and technical workers and all others. On the one hand, there will be the highly trained professional and technical workers who will man the command posts of the society and rule the universities. On the other hand, there will be the machine tenders, clerical workers, and perhaps button pushers who will man the lower ranks of the industrial complex. To this group must be added the swelling ranks of service workers who will help maintain the more complex machinery of living and provide a host of services presently being provided by individual households. The main difference between the first group who will constitute the elite and the remander who will be the proletarians (albeit at elevated standards of living) will be in educational attainment.

There is a question whether there will be enough work for all to do in the society of the future. Those who see dire results from automation predict a vast surplus of men rendered obsolete by automatic machinery. Others foresee a vast expansion in other sectors of the economy which will take up the slack caused by machine displacement. To date the latter group have more of the facts on their side, as the past few decades have seen a very large growth in the service occupations.

However, the fully automated industrial plant may exist in the petrochemical industry, but it has yet to take over in other areas of production. What will happen when more and more of our factories and offices are automated is still a moot question. There may well be a permanent surplus of men and women subsisting on their government checks, persons for whom there are no places in the postindustrial society's occupational structure and for whom the liberal, welfare-oriented state of the future will have to provide.

Incidentally, we may be seeing the beginnings of the lines of cleavage to come in the cool and sometimes hostile relations between students and working-class people. The counterdemonstration of construction workers in New York City who attacked student peace demonstrations is one manifestation. The firing upon students in Kent State and perhaps Jackson State are others. Ironically, the vision that some of our young student revolutionaries have of reaching out for a mass base in the working class seems particularly anachronistic in the light of these prospective developments.

The future is almost here as far as population trends are concerned. This will be a crowded society in just a few decades. Population growth is already at a rate which will double the population in less than half a century's time. Although there are signs that fertility is on the decline, the decline is not fast enough at present to counteract with any credibility the prediction that the United States will have a population of 400 million by the first decade of the next century. For this country at least, the problem of population growth over the next half-century is not a Malthusian one: there is plenty of food and enormous unused potential for growth in our agricultural industry. The problem may be one of distribution, rather than production of food, and of control over the by-products in waste and environmental pollution produced by a greatly augmented consuming society.

This is a trouble-making society, and it certainly doesn't look as if we are about to change in that respect. We became a major world power at the beginning of the twentieth century, and by the last half of this century we were continually embroiled in one international fracas after another. Our national pride is so overblown that we find it hard to admit that we have been beaten. There are still controversies raging, in a somewhat muted sort of way, over whether we or the British won the War of 1812. When and if we leave Indo-China we will have to figure out some way of transforming that defeat into a victory. It may well turn out to be that Vietnamization of the war will be our face-saving device, with the blame for defeat going to the Vietnamese whom we left behind holding the bag that became too hot for us to handle. Our stance toward the world is not likely to keep us from additional Vietnams in the future. But even more terrifying is the continuing escalation of offensive-defensive weaponry in the nuclear arms race with the Soviet Union. We presently subscribe to a theory that only a superiority in nuclear weapons keeps the Soviet Union from overrunning our country or launching a confrontation from which we would have to back down with fearful (but unspecified) consequences for our society.

Finally, this is a society with a racist heritage which will continue to plague us in the future. Although the official stance of the society is color neutral, the institutions which run the society on a day-to-day basis have a long way to go before they are color-blind in practice. The signs of the future are contradictory at this point. On the one hand, it is clear that the young are less racist than their elders, especially those who have achieved some educational attainment. On the other hand, there is good evidence that corporations, business firms, real estate owners and operators, and police educators have changed very little in their practices over the past two decades. Furthermore, the trends in society talked about earlier, especially those which relate to the occupational sphere, make it appear difficult, even in the absence of racism, to bring the black population of the United States into a position of parity with whites in the foreseeable future.

The vision of the future portrayed in the last few pages is one which does not take into account the changes that will be taking place elsewhere in the world. The population increases in Latin America and Asia are proceeding at a rate that will make the Malthusian problem a reality within decades for some of the countries involved. How this will affect international relations is hard to predict, at least for this social scientist, and it may well be the case that the moves made by have-not nations may be the major factors in American internal affairs.

What has all this to do with liberal education? I hope the connection is obvious, but if I have not succeeded in making it so, this is the time to state it positively. The world in which we will be spending the rest of our lives will be a different world than the present one. The young people in our universities and colleges will have to live in that world, and as far as we can see what the shape of the future will be, we should prepare them for it. The liberal education of the past is not necessarily the best liberal education for the future. We need to prepare young people for living in a society which will have a different occupational structure, have a denser population, whose position in the world may cast it in the role of international villain, and whose institutions will resist movement toward racial equality.

THE PRESENT STATE OF THE LIBERAL ARTS

To know where to go, we first have to find where we have been and where we are now. College and university education in this country has undergone a great transformation in the last thirty years, a transformation which was sensitive and responsive to what were perceived as the needs of an expanding economy in the context of a "cold war." Most of the scientists, engineers, technical personnel, and professionals who have ever lived are still alive today: this mind-boggling generalization merely means that we expanded our universities and colleges to such an extent that we were able to train more persons in these groups in the last few decades than the world managed to train in all of previous history.

To provide another measure of the size of the higher education industry, it should be noted that there are more people in college than there are farmers in the United States: respectively seven million versus five million. Of course, this is partly a tribute to the continuing rise in productivity of American agriculture, but it is also a function of the doubling in enrollment in higher education which took place between 1950 and 1960, a feat of growth which only now shows signs of slowing down.

The emphasis in academia in the post-World War II period was on the theme of "excellence" and "manpower." These themes expressed the aspiration that we were going to produce more of and the best and brightest scientists in the world, and to accomplish this end we would make sure that any and every person of potential talent could find his way into a college or university. To this end were set up national competitions like the National Merit Scholarship Corporation and the Westinghouse Science Competition. Schools which had previously relied on their alumni to send them students discovered that this source was not good enough and sent out talent scouts to scour the hinterland. Places like Harvard, Yale, and Princeton became democratized, at least to the extent that attendance at a good Eastern prep school was no longer a guarantee of admissions—you also had to have high SAT scores.

The research conducted by the behavioral scientists on higher education reflected this concern for talent and manpower. Project TALENT was set up by the Office of Education to follow a very large group of young people through their high school careers and later into college in the hopes that ways could be found to motivate more of the talented to continue their education. A few social scientists began to measure the productivity of colleges showing that some schools produced more than their expected share of the Ph.D.'s and scholars throughout the country, and many a college president scratched his head and wondered how he could make his former agricultural school into a place as productive in this sense as Reed or Antioch.

This was also a time for the upgrading of schools. New energetic college presidents came on the scene emulating as much as they could the most successful college president of all, Clark Kerr of Berkeley, who made what was essentially a second-rate school before World War II into the foremost multiversity in the nation. Teachers colleges converted themselves into universities, agricultural schools added as much liberal arts as they could stand to their curricula. Every school was looking for hotshot, entrepreneurial types to take over departments, found research centers, start the new Ph.D. program and the like. It was a period of great expectations and great changes.

In the meantime, what was happening to the students and the professors? For the students, this was a period that held out great promises of success and affluence, if you could make it over the hurdles. Young people in high schools were urged to go on to higher education. In the colleges and universities they were pushed to go on to graduate and professional school. The new hero of the time was the professor with his airplane ticket envelope sticking out of his pocket, next to his fat wallet and passport, with grants to spend and conferences to attend.

The publish or perish rule which William Rainey Harper had enunciated for the first time at the University of Chicago in the early 1900's was now the ruling norm all over the country, leading in many cases to the pathetic image of men desperately trying to think of something to say and write even if they had no desire to do so, all for the sake of promotion, tenure, or salary raise that depended on getting into print.

This was a period of careerism and intensified emphasis on academic achievement. The higher education system processed people through a series of courses, exercises, and examinations. At the end of the processing line was a good paying job in an interesting occupation and in a permissive environment. When you got into the job, it turned out to be more of the same, with productivity the norm of judgment and the kudos going to men of achievement.

Of course, some social scientists had begun to notice that peculiar things were happening along the way. For example, studies of highly creative architects, mathematicians, or physicists indicated that their records as undergraduate and graduate students were not spotless. Indeed, a great many of them had been dropouts at some period of their life. Researchers also noted that there was little relationship between scores on examinations and performance outside the school context. Robert L. Thorndike, Jr., in a monumental study of ten thousand men who went through the Air Force Cadet selection machine found that hardly any of the battery of thirty-odd tests that prospective cadets took had any relationship to performance as civilians ten years after discharge. In short, the machine we had set up was good for predicting whether or not you could surmount the hurdles of schooling but not whether you could function adequately later on.

But, what kind of men did this system of higher education produce? At the top of the heap were the careerists who learned how to focus their energies on getting by and working the system for what it was worth. These were one-dimensional men, dedicated to their professions and to success but without much regard for the consequences. The society told them they were needed badly and that they were good. It is a consequence of this combination that these are the new mandarins of our time, who with extraordinary self-assurance assert that what they are doing is essential to and good for the society (weren't they told that) and that there could scarcely be anything better than doing what they do.

There are other consequences of the past few decades' emphasis on excellence: first, those who are elected as "excellent" tend to be competitive (It has been said that the last stronghold of face to face combat is the departmental meeting.), impersonal, irresponsible (being beholden only to science whom they know better than any others), and arrogant. Indeed, those of you who have attended department or faculty meetings must always come away with a sense of wonder at how well such an assemblage demonstrates that the whole can be so much less than the sum of its parts!

Of course, these characteristics are ones which are most highly developed in the most successful of the new mandarins, in the halls of the Establishment. But the rest who went through the educational system during this period show signs of having been affected by the emphases of this period. In a real sense those who did not make the top ranks are almost as badly affected as those who did, and they suffer the extra indignity of having been a failure in a period when success was valued so highly.

It should be borne in mind that the mandarins were raised to deal with the world as it was perceived to be in the last twenty or thirty years. It was a world in which everyone had to be on his guard against the cold war enemy, when the country was perceived to be clearly in the right, and when services rendered to the state were services obviously for the common good. The height of the close association between the professors and the state was during the Kennedy regime and the early years of the Johnson presidency. The scientists, professors, professionals, and other intellectuals had been primed for years to render their services at the command of the state, and when the state commanded they went. It should be remembered that this was before we had discovered as popular issues the postindustrial state, the problems of overpopulation, and when the improvement in the position of blacks was slow but linear. All was for the best in the best of all possible worlds, a world which, furthermore, was getting better all the time.

But, now we are entering a different historical period, and we need new types of men and women with the capacity to meet the historical needs that the problems outlined earlier will present. The rest of this paper will be devoted to outlining a few of these desired characteristics.

TOWARD MULTIDIMENSIONAL PEOPLE

The men of my generation were shaped to fit the needs of a society which was attempting to heat up the pace of technological change, to increase the gross national product, and to maintain a constant state of awareness of the dangers of slipping behind in a multitude of races with the society's rivals. To accomplish these ends we relied on a "star" system in which the highest rewards went to those who produced more in the way of innovation and general productivity than others. This was the era of superentrepreneurs, great organizational feats accomplished by individual men of great talent and single-mindedness. One cannot help but admire the accomplishments of the superstars and even of the stars: one cannot help but be appalled at the costs of the star system for the run-of-the-mill men and for the stars and superstars as well.

The emphasis on occupational achievement brought about men who worked their sixty to eighty hours per week often not for the sake of what they were doing but for the sake of winning and not being left behind. These were men who were sustained by their visions of success and supported by a host of retainers and henchmen who contributed to their work quietly in the background. Not the least of henchmen and retainers were their families, wives who were often full-time anxiety absorbers and children who became items of consumption, like the main character in "The Graduate" who is exhibited by his parents to their friends in the same way as they would show off their latest household gadget.

Of course, there is nothing wrong with full-time commitment to an occupation or even double-time commitment. What is wrong is that the commitment is not optional. For men in our society, working means full-time working, and working in one of the professions and technical occupations often means more than the time commitment that any other job nominally entails. If someone really likes his job and gets enormous satisfaction out of the activity itself, there is nothing wrong with an intense absorption. But the fact of the matter is that most jobs are not that absorbing to the men who hold them, and I venture that a great proportion of the excessive workers are more concerned with success than with what it is that they are doing.

It is characteristic of our society that we worry about the problem of unemployment and underemployment. I must admit that not having a job or having one which does not pay enough to afford a decent existence is more serious than being overworked, but we have to look forward to a society in which the demand for labor will decline and in which some form of income maintenance will take the bite out of being out of the productive force. The increased productivity of our society can be put to a variety of uses; indeed, one of the uses would be to cut back on productivity on the grounds that nonoccupational activities may be just as important in the future as the occupational ones, or at least will deserve a higher place on our priority list.

There is some evidence that the trends are going in this direction. The late Walter Reuther a few months ago remarked that the labor contracts of the future would have to contain provisions to the effect that overtime was to be undertaken at the option of the worker. He indicated that demands for this provision were coming from younger workers who prefer to spend more time in leisure activities and with their families than making more money.

We should also be thinking of fractional employment in which a worker contracts to spend some part of the working week at his job rather than commit himself to a full-time position. Recently I heard of an interesting and unusual proposition put to a university by a husband and wife anthropologist team. They proposed that the university hire each of them on a half-time basis so that they both could share equally in the occupational world and in the rearing of their children. I wish I knew how the proposal was received, for the arguments for the proposition were quite convincing. The couple felt that the university would get more than they would from one full-time appointment (for example in coverage of fields) and at the same time the pair could feel free to play equal roles in the rearing of their children.

The option of part-time employment freely available to many will mean that in the upper echelons of the sciences and professions the star system will have to yield. For example, consider what that would mean as far as the medical care system is concerned. Individual practitioners are probably the most overworked of all the professions. The pediatricians I have known have been men who see so many infant and juvenile patients that they scarcely know any children. The ludicrous spectacle of a pediatrician handing his patient's mothers booklets put out by the Metropolitan Life Insurance Company on behavior problems when asked for advice, becomes understandable when you take into account the fact that he spends less than ten minutes on any one child and most of that time talking to the mother and soothing her anxiety. Bringing the work of a pediatrician within range of a forty-hour week would mean that individual practice would have to be abandoned at least in favor of partnerships and would most likely lead to the development of medical care teams composed of physicians, nurses, and paraprofessionals. Perhaps individual pediatricians would earn less money practicing in medical care teams, but there would be several gains: first, a more efficient system of medical care could be set up; secondly, better and richer lives would be made possible for the doctors involved; finally, room would be made within the medical care system for a number of new occupations.

The star system of running our large scale organizations and governments becomes increasingly risky and fragile as the size of our society increases. Among the great innovations of the past century has been the modification of bureaucratic organizations to applications to a wide variety of human activities. Bureaucracies have existed in the past——the Egyptian and Chinese state bureaucracies are prime examples——but the last century saw the discovery of this form of social organization and its application to other areas besides the state, especially to the production of goods and services.

Although bureaucratic organizations increased the ability of men to coordinate their activities in a common endeavor and thereby multiplied human productivity, they did not spread the responsibility for decision making very far through the populations concerned. For example, although when the constitution was written the United States had a population of a few million and has grown now to 200 million, we retain essentially the same structure of decision making that we had when we started out. Indeed the concentration of power in the hands of the president has become frighteningly enormous. The same might be said of universities, business corporations, states, and municipal corporations. The burden of heading up a large scale organization is enormous, and the consequences for the society are too great to be centered in a small handful of men at the top. When the president recently stated that he and he alone had made the decision to send troops into Cambodia, that fact was in itself frightening. Why should the burden of making this decision rest on one man, and the risk of the decision be borne by over 200 million in this country and an additional 50 million in Indo-China?

The burden of college presidency is now getting to be so great that only fools and gamblers are willing to take the jobs available. I wish there were more gamblers than fools, mainly because I like gamblers better, but this is not much of a choice.

The main social organizational problem of the future lies in the necessity for diffusing responsibility more widely. The present hue and cry for decentralization is one welcome trend in this direction, but we need more than decentralization. We have to learn how to govern large-scale enterprises without concentrating responsibility and decision making in the hands of just a very few. No doubt we may have to give up some efficiency in doing so, but it looks as if we have efficiency to spare and have a greater need for large-scale organizations which are responsive to the people they serve and are responsible towards the society as a whole.

A final topic deals with that primordial institution, the family. Ours is a family system which was essentially formed during a period of high mortality in which there were few domestic services commercially available. It was a period when population growth was not only desirable but necessary if complex social organization was to develop. There are several important characteristics of the family system which was responsive to those needs: first of all, it is based on the assumption that infant care and socialization is a household industry which each family carries out more or less on its own. Of course this is less and less the case today as schools and preschool institutions take over more and more of the infant care responsibilities. Remember that we developed schools because the family as an institution was neither efficient nor effective in teaching the skills of literacy and counting. Secondly, it is based on the assumption of a sexual division of labor in which males participate in the labor force on a full-time basis and women contribute to family welfare through their services in household maintenance, child care, and consumer purchasing in the retail market. In some ways, it is possible to make out a good case that women are among the badly exploited classes of our society whose labor is not governed by market considerations (except for the marriage market) and whose compensation is not tied to productivity, efficiency, or any of the other processes which supposedly regulate the price of labor on the labor market. But the analogy breaks down because it is not clear who is the exploiter and who is exploited in the relationship. The fates of people in a family are so closely bound together that it is difficult to disentangle the separate fates of individuals within the family. Thirdly, it is based on the assumption of a close connection between sexuality and reproduction. Looked at from a societal point of view, the institution of the family is designed to fix responsibility for the rearing of children and to make a legal fact out of what is essentially a problematic point, paternity.

The family as it now stands has many anachronistic qualities. First of all, the problem of the society is no longer that of assuring high fertility: indeed, quite to the contrary, high fertility prolonged over the next century will certainly insure that we will choke our planet with people and their wastes. Secondly, the sexual division of labor is no longer necessary. Our society is productive enough that we can afford to experiment with better ways of child-rearing than leaving it to the hands of untrained amateurs called parents, especially the least trained of the sexes, women. Thirdly, modern contraceptive practices have clearly separated sexuality from reproduction.

Indeed, the women's liberation movement and its sister organizations to the right (e.g., the National Organization for Women) are going essentially in the right direction. Equality between the sexes will direct the nature of the family away from its paternalistic anachronisms toward new shapes for the future. It is hard to envisage what that future might bring. Certainly, it does not seem likely that marriage will disappear as an institution, but it does seem likely that marriage will be an institution that may be harder to get into and easier to get out of. It means that there will be more participation in the labor force on the part of women. It also means that the participation will have to be on some basis closer to equality, for the present sex discriminatory practices are seemingly designed to insure that women are discouraged from trying to be serious about occupational commitments.

Perhaps the most dramatic change will be in the normative conceptions of sex roles. In terms of the current conceptions of men and women, there will occur a feminization of men and a masculinization of women. The people of the future will not be as clearly differentiated in their social behavior by sex as they have been in the past. This means that men will be more friendly to each other, be less concerned with achievement, more expressive in gesture and speech, less concerned with competition, with more attention to humanistic endeavors. Correspondingly, women will be more aggressive, outspoken, more positively oriented towards the occupational world, and more competitive.

LIBERAL ARTS AND THE MULTIDIMENSIONAL MAN

The liberal arts curriculum of the past few decades has been centered around processing people into occupational niches. The humanities curriculum has been designed primarily to lay a patina of "culture" over a basic man who was unidimensional in his outlook. The man of the future needs to develop more fully the other dimensions of human-ness, along the lines developed above.

What does all this mean for the liberal arts curriculum of the future? I submit that it means the following.

First a deemphasis on achievement and competition. We have to begin to recognize in our behavior that the tests we use measure largely the ability to pass tests and hence that the correlations between scholastic aptitude tests and college grades is not matched by anywhere near as high a correlation between such test scores and performance outside the academic walls. Of course this raises the knotty question of how do we make selections for college and for later occupational pursuits if we deemphasize tests. What are going to be the criteria that we should use either in their place or as supplements? I do not have a clear answer to this question. I suspect that we will develop appropriate selective devices when we shift our attention away from achievement in the academic context to achievement in postuniversity life.

There is another compelling reason for deemphasizing occupational achievement. We need a more relaxed society, one which is willing to take a second or even a lower place in the ranks of nations as far as productivity is concerned. There is no reason why we should have the best of everything or why we should be better than any other nation in a large number of fields. There has been enough achievement and social change wrought through that achievement to last us for a time to come. This is not to say that we should discourage all persons from devoting themselves to achievement in any particular line. All I mean to advocate is the downgrading of achievement from a goal for everybody to an option for those who want to take it up.

Secondly, we need a liberal arts curriculum which constantly questions the organization of responsibility and authority in our large scale organizations. The successful society of the future is one which will develop forms of social organization which will lessen the burden on top leadership and spread the sense of participation in decision making more widely through society. We need to experiment with new forms of social organization which diffuse authority and responsibility through larger and larger numbers of men and women and, even more important, through greater proportions of the population.

This may mean that we may have to tame the committee, or at least learn to live gracefully with the committee system. In any event, collective decision making systems that are not too painful and which produce decisions to which members of the collectivity are committed are obviously needed. In this connection we need to learn more about the experiences of the new socialist countries which have been experimenting with participatory democratic institutions in their factories, businesses, communities, and schools. In short we need to know more about Cuba, Yugoslavia, Czechoslovakia, and how their systems of participatory democracy work out in practice.

Developments in this direction may mean that we have to put up with higher overhead costs in social organization than we have been willing to put up with in the past. But higher overhead costs may be a small price to pay for a more egalitarian society and one in which there is greater commitment to the society on the part of its members than is the case at present.

Thirdly, we need a liberal arts curriculum which positively provides for the possibility that the job is not going to be all important in the society of the future. It is extremely easy for American educators with their long history of concern for adult and "continuing" education to fall into the trap of trying to persuade people to employ their increased leisure time in useful and enlightening education. If you have some spare time outside of your job you should spend it on improving yourself, preferably doing something which is difficult and unpleasant. Maybe we ought to prepare people in enjoyment rather than self-improvement, honing their senses so that they can have increased pleasure from music, sex, art, sports—–teaching them how to participate as more than spectators in those activities in which they can participate. I suppose I am advocating what to some adult educators is a curriculum of sin. Since we are apparently going to sin anyway, perhaps we ought to learn how to do it well.

Since we are going to live in an environment that will be more densely populated than it is today, we will have to learn how to live under such conditions. The management of interpersonal relations may be as much a valued skill in the future as the management of internal tensions is today. The importance of such skills will be greater if the changes in social organization alluded to earlier also come about.

Fourthly, the liberal arts curriculum cannot sustain the full burden of solving the problems of racism, although there is some room for improvement here as well. At the moment, I would venture that our colleges and universities are perhaps the least racist of American institutions, with perhaps the military as their nearest rival. Part of the problem of making colleges and universities available to blacks, Chicanos, and Indians is that we are still wedded to the use of measures of intellectual performance as the main criteria for admission into and passage through the higher educational system. The changes advocated above are ones which deemphasize this criterion, replacing it with a broader and somewhat softer set of goals emphasizing the nonintellective functions as well.

In sum, we have reached a point in technical achievement and productive efficiency where we can begin to relax a bit and plow some of the benefits of our past achievement into other areas of life than the occupational. As a society we should stop running as if hunger were still at our heels and turn our attention to problems of equitable distribution of the products of efficiency and technology, to the betterment of interpersonal relaxations, the achievement of a participatory and more egalitarian society, and the attainment of a greater sense of world security.

A Comprehensive Plan of Liberal Education for a Technocratic Society

KENNETH H. MYERS, *Southern Illinois University at Edwardsville*

The purpose of the proposed program of "liberal education" is to "cap-off" an individual's preprofessional or precareer formal academic experience. The setting is the United States in the early 1970's, and the entering student-participant is seventeen to eighteen years of age. The program is of approximately four years' duration, with 60 percent of the available time being devoted to the "liberal" aspects of the program and 40 percent to more specific preparation for an immediate career or for graduate study.

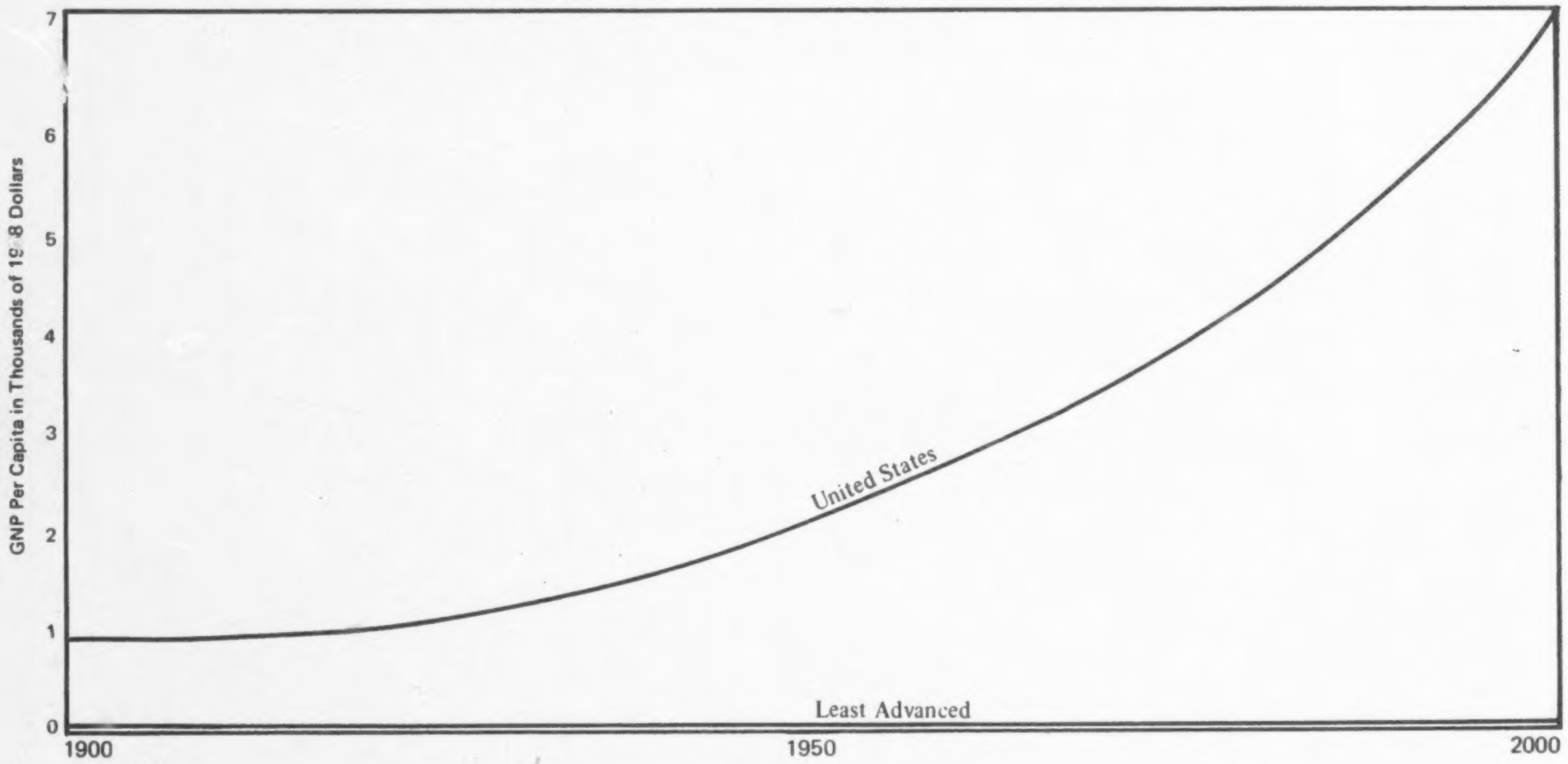
It is also assumed that there is general agreement on certain key aspects of this advanced industrial, or "technocratic," society.

First, it is assumed that we are in a society in which rapid scientific and technological change is the order of the day and, moreover, that this rate of change is steadily increasing. One indication of this accelerating rate of change is per capita output of goods and services (GNP) in the most advanced society of a given age, such as the United States in 1970 (Exhibit 1). Of current importance is the fact that nearly one-half of the world's population is still at a subsistence level of income, i.e., an income possibly below that of the typical Egyptian in 2000 B.C., while in this advanced industrial nation in 1970 the GNP per capita is nearly $4000—–or some forty times the GNP per capita of the underdeveloped half of the world as represented by India. Even more critical is the prognosis for the year 2000, when the ratio between the income of the average citizen of the United States versus that of the typical citizen of the "underdeveloped" nations of the world probably will have risen to over 70 to 1 (Exhibit 2). Some idea of the rate of change is given by the fact that this ratio was only about 10 to 1 in 1900.

The impact of these developments upon segments of the world population is that by the year 2000 some 20 percent of the world's population will be absorbing over 80 percent of its goods and services (Exhibit 3). These results flow from differential rates of economic growth (high in industrial nations,

EXHIBIT 1.

Levels of Scientific and Technological Achievement in the Most Advanced and Least Advanced Major Economies as Indicated by Units of Output of Goods and Services Per Capita



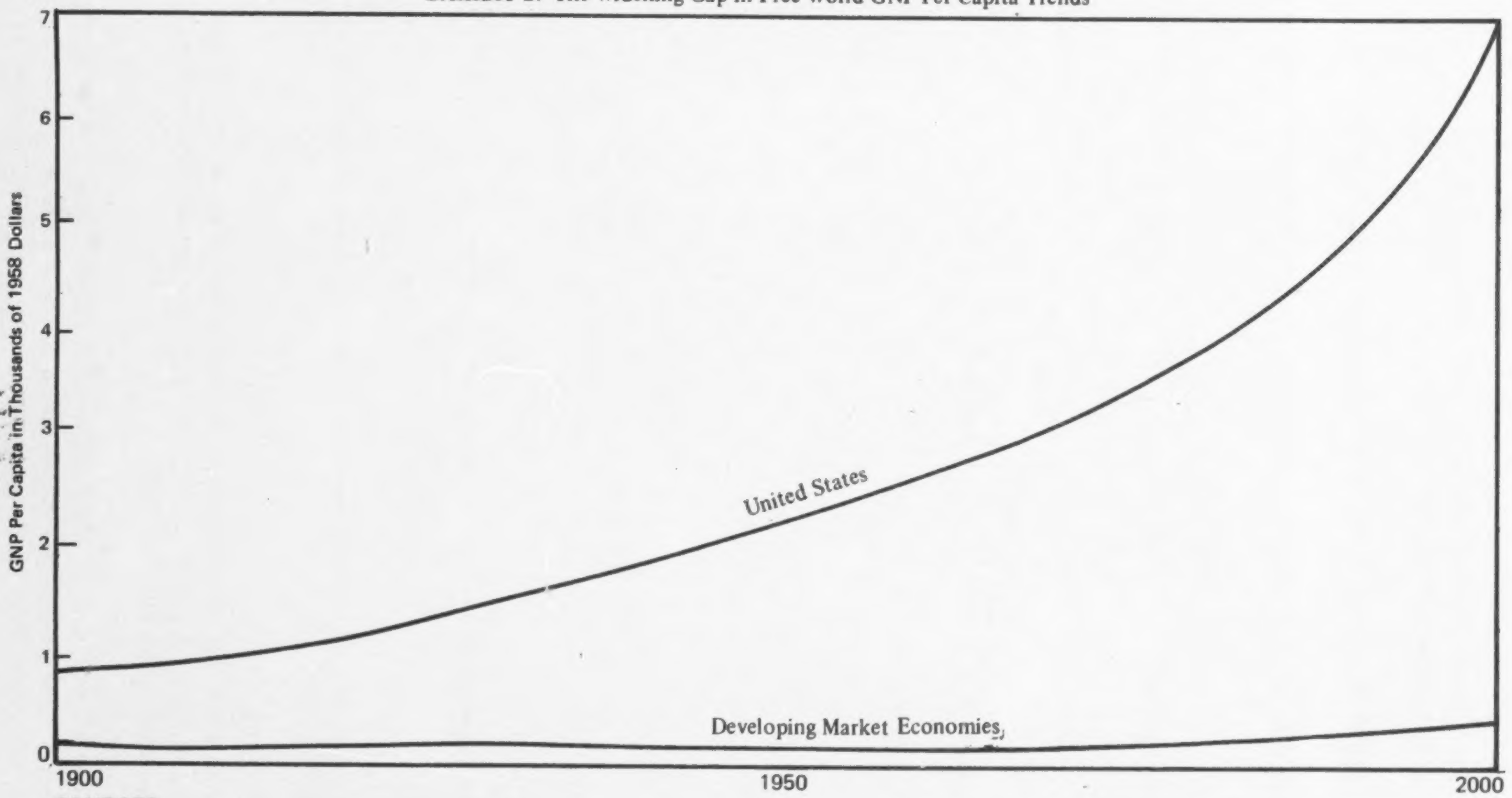
SOURCES:

United Nations, Department of Economic and Social Affairs, **World Economic Survey, 1963**, pt. 1, **Trade and Development: Trends, Needs and Policies** (ST/ECA/84), 1964, p. 21.

United Nations, Statistical Office, **Statistical Yearbook** (1948-69), issues 1-21, 1949-70.

U.S. Bureau of the Census, **Historical Statistics of the United States, Colonial Times to 1957** (Washington, D.C., 1960), p. 139.

EXHIBIT 2. The Widening Gap in Free World GNP Per Capita Trends



SOURCES:

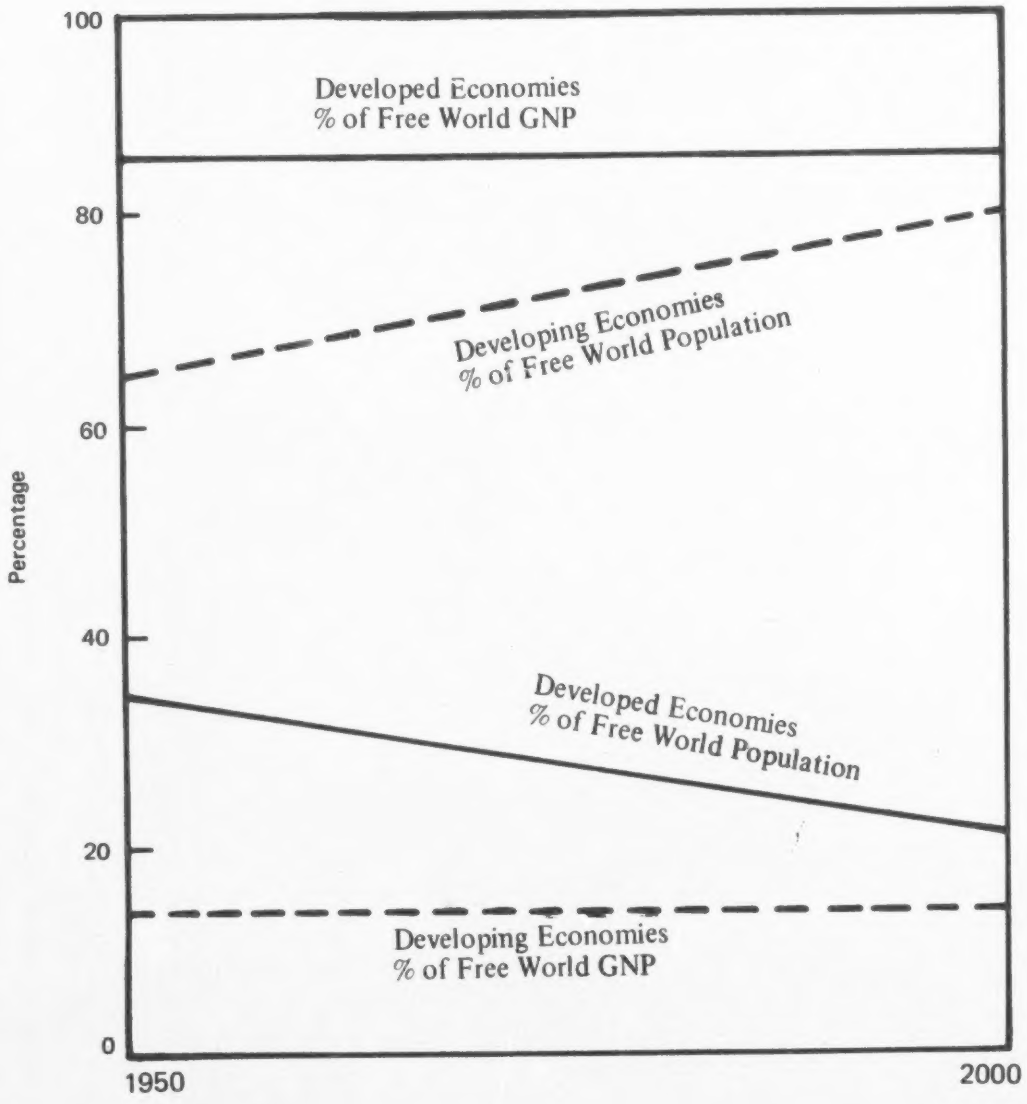
United Nations, Department of Economic and Social Affairs, **World Economic Survey 1963**, pt. 1, **Trade and Development: Trends, Needs and Policies** (ST/ECA/84), 1964, p. 21.

United Nations, Statistical Office, **Statistical Yearbook** (1948-69), issues 1-21, 1949-70.

Everett E. Hagen, "Some Facts About Income Levels and Economic Growth," **Review of Economics and Statistics** 42 (February 1960): 62-67.

low in nonindustrial nations) and differential rates of population growth (low in industrial nations, high in nonindustrial nations).

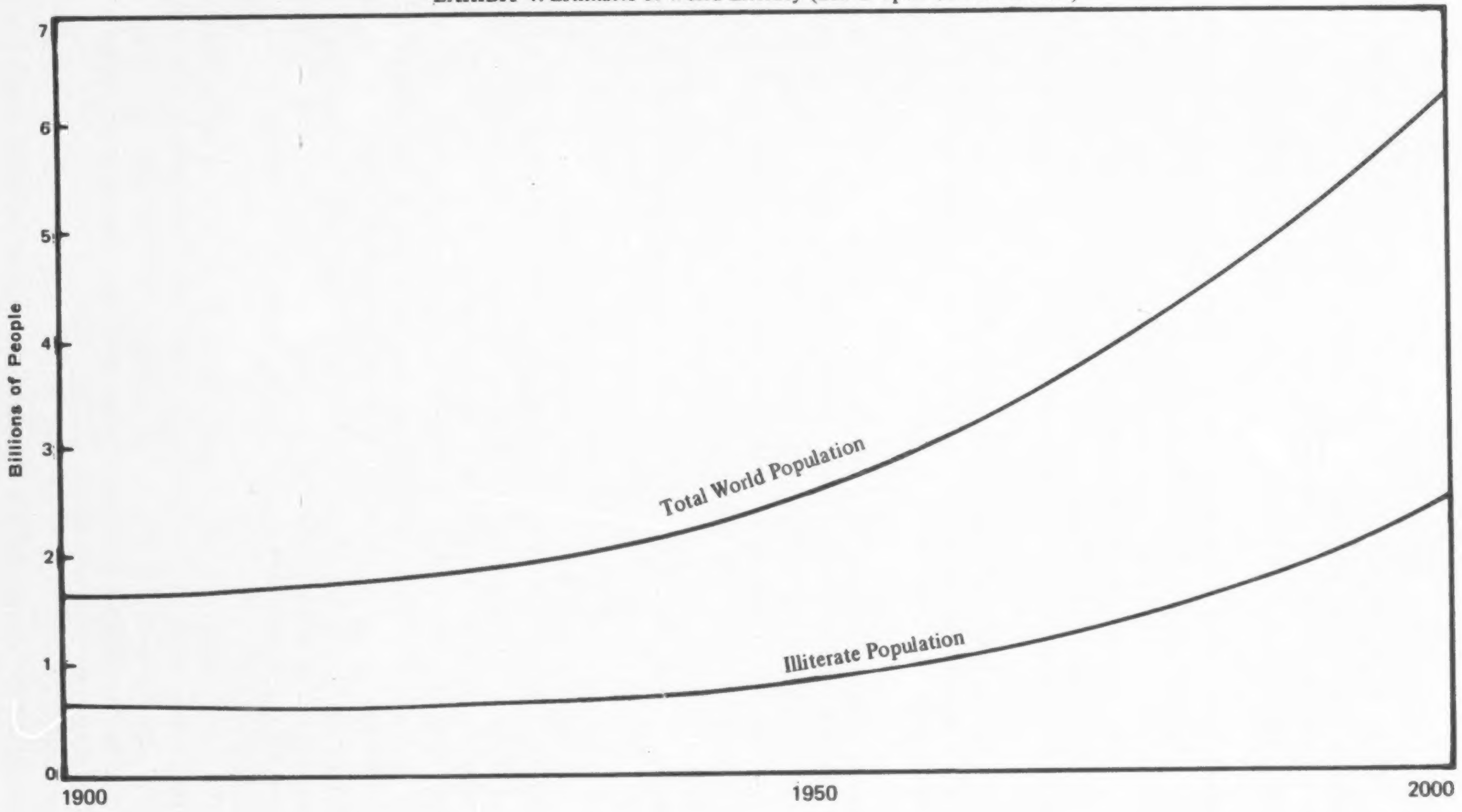
EXHIBIT 3. Estimated Distribution of Free World Population and Production of Goods and Services (in 1960 Dollars)



SOURCE:
United Nations, Department of Economic and Social Affairs, **World Economic Survey 1963**, pt. 1, **Trade and Development: Trends, Needs and Policies** (ST/ECA/84), 1964, p. 21.

Another corollary of these differential growth rates is the increasing number of illiterates in the world––from about 500 million persons in 1900 to an estimated 2000 million persons in the year 2000 (Exhibit 4). The

EXHIBIT 4. Estimates of World Literacy (Based Upon Current Trends)



SOURCES:

Banynee A Liu, "700,000,000 Illiterates: Is World Literacy On The Increase?" **The Unesco Courier**, March 1958, p. 4.

United Nations, Statistical Office, **Statistical Yearbook** (1948-69), issues 1-21, 1949-70.

dangers to human society on "space-ship earth" that result from these diverging trends are accentuated by another explosion––that of world communications, especially via audio and audiovisual media. As a consequence, even the illiterate tribesman in an outlying village in India or Peru will be subject to the frustration and bitterness that comes from knowing how relatively poor he and his family are and from a growing determination to wrest some larger portion of the world's good things for himself and his children. Nor is this phenomenon of the frustration and anger of the poor or "disadvantaged" limited to underdeveloped peoples in other nations. It also occurs within our own affluent society––witness the riots of Watts, Newark, and Detroit, and the growing disenchantment of our college and university youth.

To these problems relating to the production and distribution of wealth let us add those arising from the impact of industrial man upon his natural environment––pollution of air, water, and land, and the upsetting of life-supporting ecological relationships. Finally, there is continuing conflict between macrogroups of humans––national rivalries, racial and religious antagonisms, disputes over modes of economic and political organization, competition for access to the world's natural resources and to trading areas.

There is also a need to consider how the social organization of modern industrial society can be restructured in order to reestablish the sense of community and belonging that characterized earlier societies and which disappeared with the elimination of the tribe, the clan, and the extended family, along with the farm or village or town as the normal habitat of man. How shall we rearrange urban settings so as to restore the vital fabric of human relationships that has been so cruelly torn asunder?

Finally, there are presented with increasing urgency the age-old questions: What is man? How came he to be? To whom and for what is he responsible? What is his mission in space and time? What ought he seek as the good community and the good life? Every maturing mind seeks answers to these questions, and today's youth, perhaps more than ever before, is confronted with the incongruity between old ways and new needs. What is desperately needed is a view of human destiny that can be reconciled with our growing awareness of the universe, its laws, our planet, and the other living things that share this beautiful blue ball as it serenely circles its mother star in the vast void of interstellar space.

The basic objective of a "liberal" education, then, is to assist maturing minds to find useful answers, or if not answers then operationally meaningful approximations or approaches, to the foregoing problems and issues which are so vital to the continued positive evolution of their own lives, of this society, and of mankind.

A secondary objective is to assist young men and women to identify meaningful life roles or perhaps "careers," to plan a transition to those roles, and to take preliminary steps toward the fulfillment of the plan.

The program to implement the foregoing has five major elements. These elements, together with the anticipated contributions of each, are presented below.

ELEMENTS OF A LIBERAL EDUCATION

Comparative study of cultures

What: The study of at least two other cultures, one of them non-European and one nonindustrialized; for example, France and Iran or Japan and Bolivia.

Comparison of the United States with these cultures in the following three broad areas:

A. Social, political, legal, economic, and market structures;

B. Historical development, religious beliefs, values and attitudes, language, and art forms;

C. Present condition and projected status to A.D. 2020.

Why: First, to lay the foundation for awareness of one's self as a member of a culture.

Second, to develop tolerance for and understanding of other cultures.

Third, to strive for similar tolerance and understanding toward subelements of one's own culture, i.e., Catholic versus Protestant, black versus white, affluent versus poor, northern versus southern, south European heritage versus north European, and so forth.

Fourth, by laying the groundwork for constructive attitudes to create a basis for positive action to bridge the gaps between the United States and other nations, and between the many subelements of our own culture.

Fifth, to provide an incentive and a methodology for further study of additional cultures as life unfolds and new needs arise.

How: Set up regional or cultural study groups comprised of the relevant disciplines. Encourage and facilitate faculty and student exchanges with the chosen regions or cultures. Sponsor work-study periods abroad.

Use field projects to develop in-depth competence to identify and analyze subcultures.

Foster field projects of a constructive character, a la Peace Corps, Job Corps, and Head Start.

Use team teaching, block scheduling, and participative instructional modes (self-learning projects, small groups with student leaders, etc.) so as to achieve integrated learning communities.

Emphasize the "human" dimension of learning along lines to be developed further under *Organizational Behavior.*

Scientific outlook and methodology

What: The study of the evolution of science and technology with special attention to "outlook" and to methodology. Concurrent and integrated development of the "systems concept," of decision logic, of investigative procedures, of relevant statistical and mathematical tools, and of the computer as a memory bank, information generator, and analytic processor.

Forecast state of science and technology to A.D. 2020.

Why: To provide an essential foundation for viewing, understanding, and contributing to contemporary industrial society.

To develop an incentive and a capacity for continued acquisition of scientific and technical knowledge on an "as needed" basis.

How: Concurrent and integrated development of concepts and tools.

Apply concepts and tools to problems in the social sciences as well as in the physical or material world.

Employ field projects for in-depth study (pollution, urban transport, etc.).

Interrelate the social and technical dimensions of these problems, i.e., to what extent is the elimination of serious pollution hazards a social rather than a technical problem. Use "block and gap" approach in all subjects instead of comprehensive survey method, i.e., move deeply into selected areas and push to the frontiers of both scientific knowledge and application. Strive for relevance, i.e., field application, in all areas selected for study. Employ teaching teams comprised of members of relevant disciplines. Strive for "humanized" learning by means already described above and amplified in the next section.

Organizational Behavior

What: Consideration of the "process" aspects of interpersonal, small group, and large group behavior, with special attention to developing effective processing modes for large organizations.

Why: To enhance personal effectiveness as a potential member of organized social, political, and economic activity, as well as in family and community relationships. More specifically, to prepare individuals for roles in large-scale, complex, highly interdependent social, scientific, and economic organizations.

How: Structure learning in the areas already described so as to require interpersonal, small group, and large group participative activity.

View such activity as a "living-learning" laboratory setting for studying and improving individual competence as a peer, a subordinate, and a leader in group situations. Employ faculty teams in relevant disciplines.

Give special attention to "how people learn" and apply the fruits of research and development in this area to the learning processes of all three areas.

Use the organizational behavior faculty as a resource for the first two faculty groups in respect to the learning organization and the learning process.

Design and implement appropriate physical facilities.

An Experimental Design for Learning

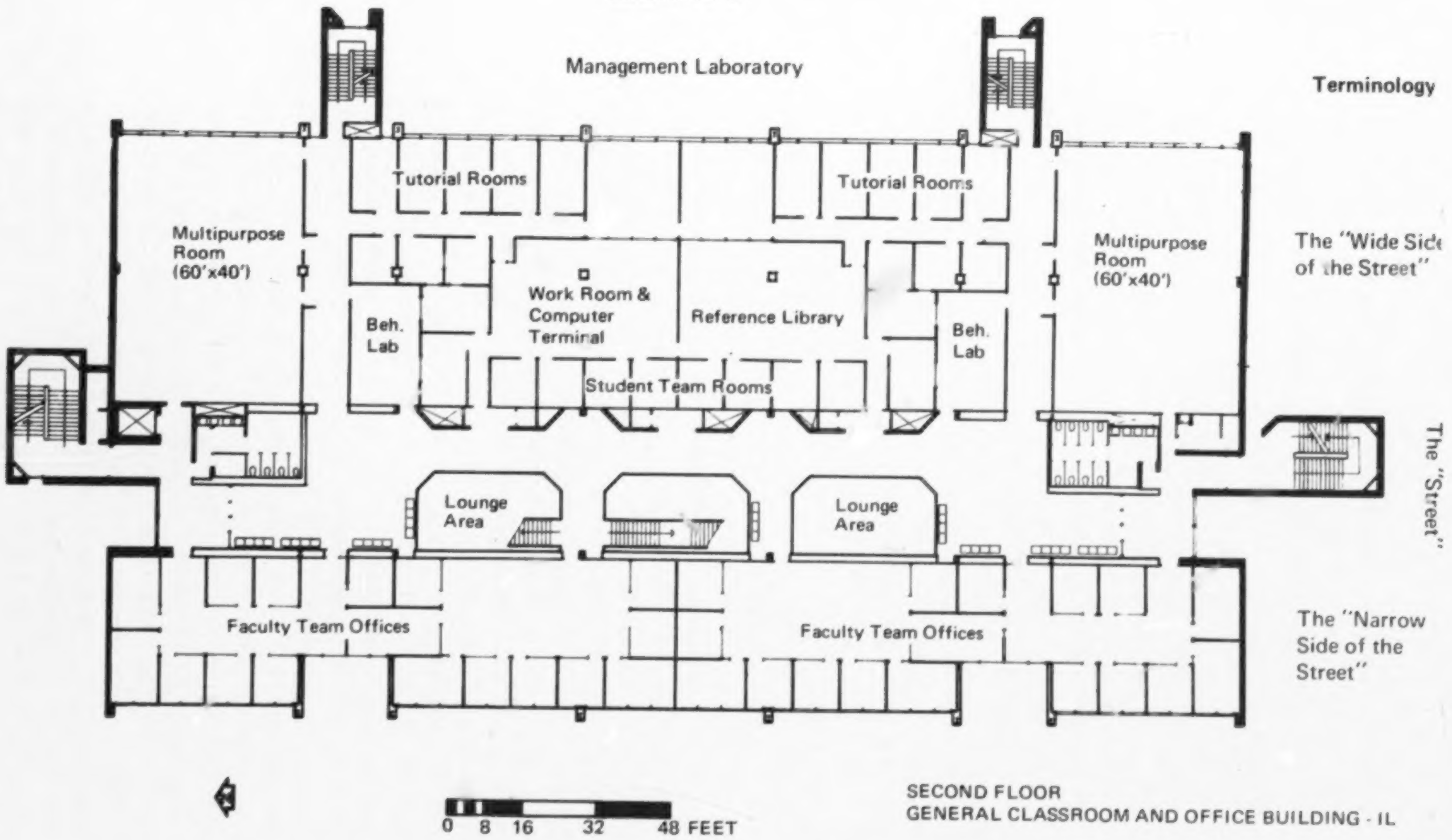
The concepts outlined in the foregoing section on "Organizational Behavior" can be concretely illustrated with the LIFT (Learning through Integrated Student-Faculty Teamwork) program, which is being tested by the Division of Business at Southern Illinois University at Edwardsville. The basic objective is to create a "learning community," i.e., an environment in which faculty and students share in the quest for self-development. At Southern Illinois University, this is done by bringing together a set of faculty resources, a group of students, a body of learning objectives, and a physical space.

More specifically, a group of students are enrolled in a set of courses. To the group is assigned a "learning space" and a set of faculty resources four hours per day, five days a week, for an academic quarter. The block of time for all four courses may then be scheduled at will. For example, the student-faculty group may elect to devote all of its time the first two weeks to only two of the four subjects, or it may elect to pursue a project which involves all four subjects. Similarly, the block of space assigned to the group may be arranged at will to fit the learning mode being employed. The group can meet as a whole, or as subgroups of 20 or 10 or 5 as the day-to-day (indeed, hour-to-hour) requirements indicate. During 1968/69 and 1969/70 experimental groups of 25 to 40 were taught in the fashion described. In 1970/71 a group of 100 was organized in the LIFT mode and a variety of experimental spatial arrangements were employed.

The necessity of designing a new classroom building for the business division then presented an opportunity to plan on a large scale. During 1969/70 students, faculty, and administration worked with an architectural design group (TAC of Cambridge, Mass.). The result is suggested by Exhibit 5 which presents the floor plan of one level of a four-story building. It is anticipated that each level will accommodate up to 240 active students, in two groups of 120 each, at a moment of time. During a normal day, each space may be used by two groups of 240 during the day (one in the forenoon and one in the afternoon) as well as by an evening school class.

Each group of 240 students will consist of two faculty-student (LIFT) teams who will share a central laboratory/learning space which they may use alternately. The basic LIFT teaching module will be comprised of 120 students, four faculty, two teaching assistants, and one secretary. There will be one such LIFT module accommodated at each end of the "wide side of the street" (see Exhibit 5) where there will be one large classroom which can be divided into two by a movable wall. The group of 120 will meet as a whole whenever lecture, film, or TV instruction is employed. The room will be divided whenever large group participative instruction, as exemplified by

EXHIBIT 5


Management Laboratory
Terminology
Tutorial Rooms
Tutorial Rooms
Multipurpose Room (60'x40')
Multipurpose Room (60'x40')
The "Wide Side of the Street"
Beh. Lab
Work Room & Computer Terminal
Reference Library
Beh. Lab
Student Team Rooms
The "Street"
Lounge Area
Lounge Area
Faculty Team Offices
Faculty Team Offices
The "Narrow Side of the Street"
0 8 16 32 48 FEET
SECOND FLOOR
GENERAL CLASSROOM AND OFFICE BUILDING - IL

Spacial Arrangements Keyed to Learning
Division of Business, Southern Illinois University at Edwardsville

the use of the case method, is employed. Tables and chairs will comprise the furnishings and will be movable. Whenever small group discussion is desired, these tables and chairs may be arranged to provide for subdivisions of the base group.

The large open space (between the two sets of classrooms at the ends of the building and surrounded by small offices) is a management laboratory. In this space will be located computer terminals, unit record and calculating equipment, a reference library, and a number of work tables. The peripheral offices will be used for small group activities––experiments in group dynamics, project teams, and cell-learning activity.

The rooms grouped about the L-shaped interior space at either end of the laboratory area can be thought of as behavioral laboratories (see Exhibit 6). "One-way" windows open from several rooms into the adjacent spaces. Each space may accommodate portable audiovisual recording equipment. This equipment may be connected electronically to the TV monitors in the large classrooms at the extreme ends of the building. Audiovisual recording capability in the large classrooms will also be provided to permit study of the process dynamics of large groups.

Referring again to the space between the two ends of the building which has been designated "management laboratory," against the exterior wall is a series of "tutorial" rooms which will house the instructional and supporting staff for the two LIFT modules of 120 students each. These rooms will permit the instructional staff to meet with groups of six or more students in tutorial sessions. The outside offices will also accommodate two teaching assistants and one secretary for each LIFT module.

It is anticipated that the technique of cell-learning will be used extensively, and the small rooms in the complex at each end of the laboratory area will be used to assemble individual elements of five-man cell-learning groups.

Across the center corridor from the LIFT module is the "narrow side of the street." It is divided into four blocks of offices, each containing eight office units. These blocks of offices will be allocated to the interdisciplinary teams staffing the LIFT modules. Each set of offices is grouped about an open space which will accommodate two secretaries and up to four research assistants. Each faculty member will then have two offices: a tutorial space to be used while actively engaged in class and tutorial activity, and a work space to be used at other times.

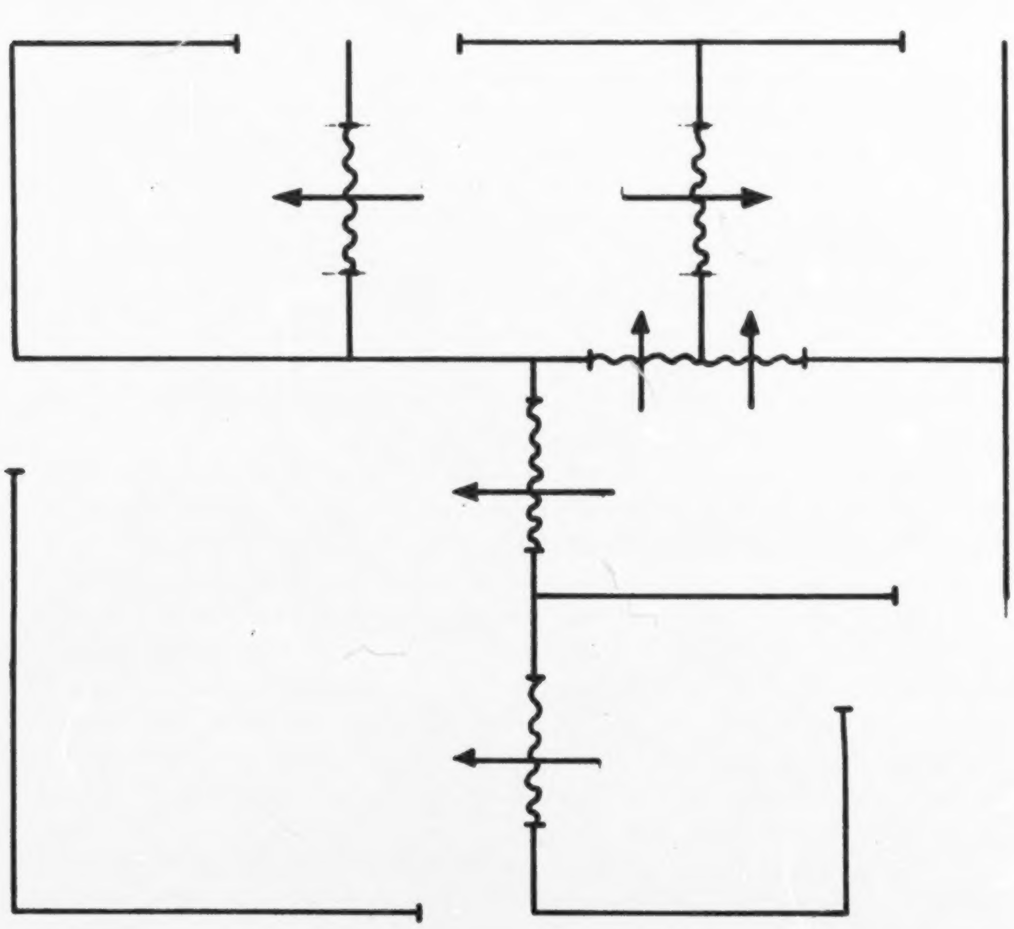
It is hoped that this rather extensive digression from the main theme has served to indicate the spatial aspects and physical, faculty, and administrative support appropriate to the kind of learning process being proposed. While the space was designed for undergraduate and graduate students pursuing work in business administration, it is suggested that a quite similar arrangement would be suitable for the liberal arts program already described. Let us now return to the problem of providing a transition between the institution of higher education and the adult society.

Transition to Role as Contributor to Society

What: Assist student to identify his prospective role in society and to provide means whereby he may gain firsthand knowledge thereof.

Why: To help overcome a basic gap in our society's provision for the education of youth. At one time young people could observe at close hand the behavior and skills necessary for fulfillment of a role as farmer, doctor, lawyer, tradesman, craftsman, etc. Moreover, the choice was usually simple––the son followed in his father's footsteps. This is no longer the case, and millions of young people each year are forced to make career choices based upon grossly inadequate understanding and knowledge.

EXHIBIT 6. Behavioral Laboratory - a network of rooms provided with means of viewing (arrows indicate one-way windows) and hearing so that the events within one space may be monitored from the adjacent space. Portable audio-visual recording units may be placed in any of several rooms.



How: Study of roles in connection with the study of cultures, methodology, and organizational behavior.
Encouragement and facilitation of work-study patterns during at least the sophomore-junior phase of the four-year program.
Experience in organizational behavior as peer, subordinate, and leader.

Learning Objectives

What: The learning objectives of institutions of higher education, as they may be inferred from the structure and process of typical colleges and universities, are shown in Exhibit 7. As noted therein, the primary emphasis is upon transfer of a quantity of substantive knowledge from the "pitcher" (teacher) to the "catcher" (student), usually by means of lecture. Periodic measurements (exams and quizzes) suffice to keep the often unwilling and resentful subject "in line," and to appraise his capacity to repeat by rote (hence "closed book" and "objective" examinations). A mode better calculated to develop the appearance of "education" without its substance can hardly be imagined! The antidemocratic, dogmatic, and coercive tactics of the "far-right" or "far-left" among student radicals parallel almost directly the educational mode favored, or at least employed, by the typical university faculty, especially in large classes for freshmen and sophomores. Small wonder that the more inquisitive, aggressive, and socially concerned students rebel!

In contrast to the foregoing, Exhibit 8 illustrates a revised set of educational objectives. In it, greatly increased emphasis is placed upon three new areas: problem perception and problem solving, organizational behavior, and learning how to learn.

Why: Given the fluid state of human affairs and the rapidly changing "state of the art" in nearly every field of inquiry and endeavor, comprehension and retention of the present state of the art, even if possible, will not serve the emerging needs of our society. Rote answers are not the desired objective, even though the typical processes of higher education make it seem so.

Instead, our mission is to develop and nurture the inquiring mind and to equip it with the necessary tools, concepts, and attitudes to cope with changing needs. The goal is capacity for, and interest in, lifelong learning.

How: One learns by doing. If one is to gain skill in problem perception and problem solving, then this is what he must do, again and again, analyzing accomplishments and failures, and striving to improve in a conscious, orderly, and deliberate way. Similarly, the improvement of effectiveness in organizational behavior and in learning how to learn depends upon repeated "doing."

EXHIBIT 7. Emphasis in Traditional Programs in Higher Education

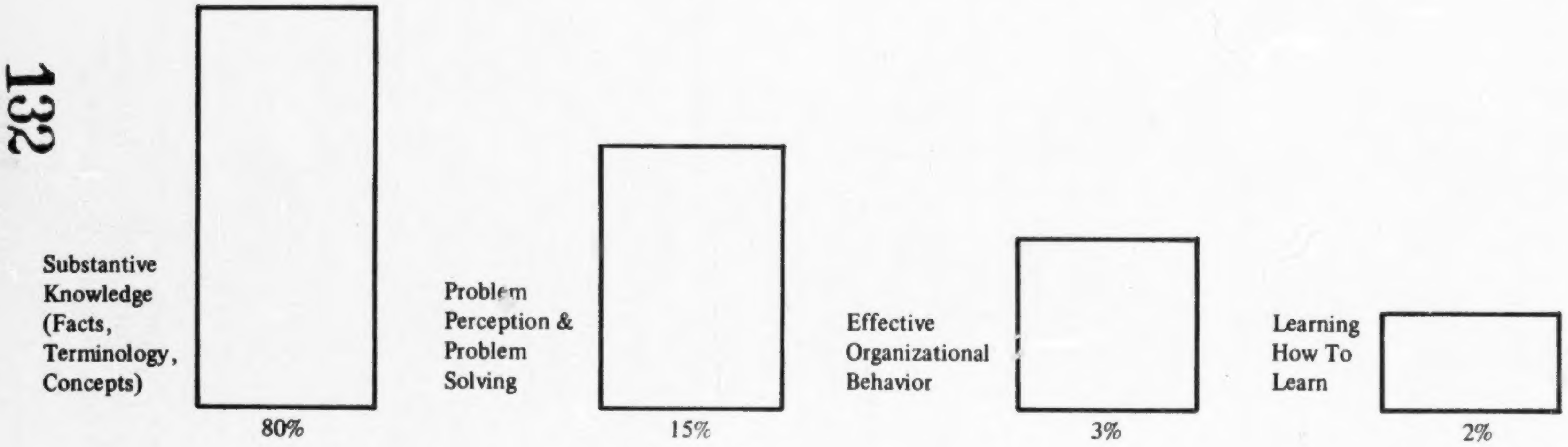
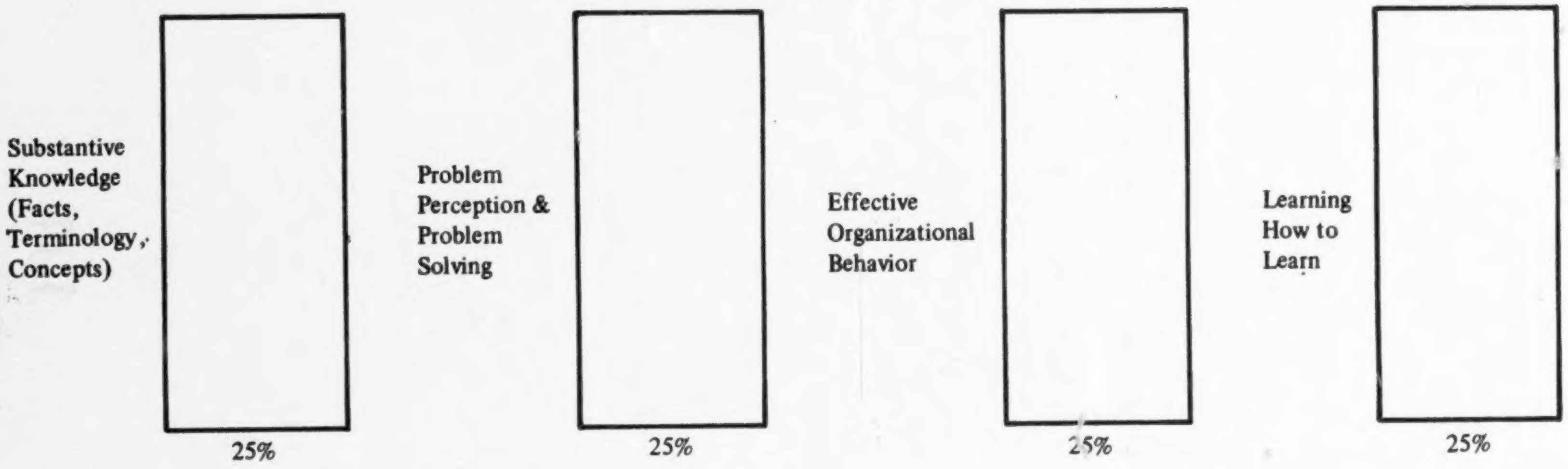


EXHIBIT 8. Proposed Emphasis



The expertise of the organizational behavior faculty should be of special assistance in implementing the learning objectives of this part of the program through their incorporation in the program's cultural and methodological aspects. The revised educational process, with its emphasis upon responsible, participative behavior and upon field and laboratory experience, should go far toward fulfilling learning goals.

SUMMARY AND CONCLUSION

The foregoing proposal for a "liberal education in a technocratic society" began with a discussion of the environment of twentieth-century man in the latter one-third of that era. Critical problem areas for the United States in particular and for mankind in general were identified. Salient characteristics of this scientific and technological age, and their implications, were briefly considered. Attention was given to "how people learn." A statement of purpose was provided. Finally, a five-point educational program was proposed. The first three parts of the program would replace the traditional liberal arts curriculum with (1) the comparative study of selected cultures, (2) the study of scientific outlook and methodology, and (3) the study of organizational behavior. All three areas of study are to be presented in a new integrated, problem-focused, cooperative teaching-learning form as described in the section *An Experimental Design for Learning.* The fourth part of the program is concerned with the objective of providing a much more effective transition to a career role. The last part deals with the process of higher education with emphasis upon participative learning modes that are not only more effective in developing a useful command of substantive knowledge but which add three important new dimensions to the learning experience.

Lest the proposals submitted seem too "far out," the writer offers nearly three years of experience with a pilot learning mode which incorporates most of the ideas expressed in the last two sections and also some of the substantive matter and objectives of the first three. This proposal is not meant to be merely rhetorical, but is intended to be a first approximation to a positive and practical action plan. Finally, the new teaching-learning mode promises to provide a substantial improvement in the quality of the educational experience at little or no increase in cost.